checked by MT
2/6/17

CETIFICATION

SDG No:	JC34340	Laboratory:	Accutest, New Jersey
Site:	BMS, Building 5 Area, PR Humacao, PR	Matrix:	Groundwater

SUMMARY: Groundwater samples (Table 1) were collected on the BMSMC facility – Building 5 Area. The BMSMC facility is located in Humacao, PR. Samples were taken December 20-22, 2016 and were analyzed in Accutest Laboratory of Dayton, New Jersey for the parameters shown in Table 1. The results were reported under SDG No.: JC34340. Results were validated using the latest validation guidelines (July, 2015) of the EPA Hazardous Waste Support Section. Individual data review worksheets are enclosed for each target analyte group. The data sample summary form shows for analytes results that were qualified.

In summary the results are valid and can be used for decision taking purposes.

Table 1. Samples analyzed and analysis performed

SAMPLE ID	SAMPLE DESCRIPTION	MATRIX	ANALYSIS PERFORMED
JC34340-1	MW-14	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-2	MW-18	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA; Inorganics; Methane
JC34340-3	FB122016	AQ- Field Blank Water	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-4	EB122116	AQ- Equipment Blank	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-5	TB122016NRB	AQ – Trip Blank Water	VOCs
JC34340-6	TB122016RSB	AQ – Trip Blank Water	VOCs
JC34340-7	BR-1	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-8	BR-1 DUP	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-9	BR-2	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA; Inorganics; Methane
JC34340-10	BR-3	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-11	BR-4	Grondwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-12	FB122116	AQ- Field Blank Water	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA
JC34340-13	TB122116NR	AQ – Trip Blank Water	VOCs

SAMPLE ID	SAMPLE DESCRIPTION	MATRIX	ANALYSIS PERFORMED
JC34340-14	TB122116RS	AQ – Trip Blank Water	VOCs
JC34340-15	EB122216	AQ- Equipment Blank	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA; Pesticides
JC34340-16	RA-10D	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA; Pesticides
JC34340-16D	RA-10D MSD	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA; Pesticides
JC34340-16S	RA-10D MS	Groundwater	VOCs; SVOCs; PAHs + 1,4-Dioxane (SIM); LMWA; Pesticides
JC34340-17	TB121616NRA	AQ – Trip Blank water	VOCs
JC34340-18	MW-20S	Groundwater	Pesticides
JC34340-19	MW-20D	Groundwater	Pesticides
JC34340-20	RA-10S	Groundwater	Pesticides
JC34340-21	FB122216	AQ – Field Blank Water	Pesticides

Reviewer Name: Rafael Infante
Chemist License 1888

Signature: Rafael Infante

Date: January 28, 2017

SGS Accutest

Report of Analysis

Client Sample ID:	MW-14		
Lab Sample ID:	JC34340-1	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68033.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		76-120%
17060-07-0	1,2-Dichloroethane-D4	111%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	114%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 2M90222.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW-14		
Lab Sample ID:	JC34340-1	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2M90222.D	1	12/28/16	CS	12/27/16	OP99497	E2M4004
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol [a]	ND	5.1	0.84	ug/l	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	5.1	0.91	ug/l	
120-83-2	2,4-Dichlorophenol [a]	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol [a]	ND	5.1	2.5	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	10	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	5.1	1.3	ug/l	
95-48-7	2-Methylphenol [a]	ND	2.0	0.91	ug/l	
	3&4-Methylphenol [a]	ND	2.0	0.90	ug/l	
88-75-5	2-Nitrophenol [a]	ND	5.1	0.98	ug/l	
100-02-7	4-Nitrophenol [a]	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.1	1.4	ug/l	
108-95-2	Phenol [a]	ND	2.0	0.40	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.1	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol [a]	ND	5.1	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol [a]	ND	5.1	0.94	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.22	ug/l	
1912-24-9	Atrazine	ND	2.0	0.46	ug/l	
100-52-7	Benzaldehyde	ND	5.1	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.35	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.41	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.47	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	0.35	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-14		
Lab Sample ID:	JC34340-1	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.66	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	0.41	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.56	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.49	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.52	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.34	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.51	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.27	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.40	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.34	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.1	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.1	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.1	0.45	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.66	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.49	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.23	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.38	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		14-88%
4165-62-2	Phenol-d5	27%		10-110%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-14		
Lab Sample ID:	JC34340-1	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	77%		39-149%
4165-60-0	Nitrobenzene-d5	62%		32-128%
321-60-8	2-Fluorobiphenyl	70%		35-119%
1718-51-0	Terphenyl-d14	86%		10-126%

(a) The acid spike standard was not added to the LCS. There is no sample left to reextract.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67748.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW-14		
Lab Sample ID:	JC34340-1	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67748.D	1	12/30/16	SG	12/27/16	OP99497A	E3M3155
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.051	0.023	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.051	0.034	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.044	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.034	ug/l	
218-01-9	Chrysene	ND	0.10	0.027	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.037	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.039	ug/l	
91-20-3	Naphthalene	ND	0.10	0.030	ug/l	
123-91-1	1,4-Dioxane	2.71	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		24-125%
321-60-8	2-Fluorobiphenyl	72%		19-127%
1718-51-0	Terphenyl-d14	65%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-14		
Lab Sample ID:	JC34340-1	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107979.D	1	12/29/16	XPL	n/a	n/a	GGH5599
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	102%		56-145%
111-27-3	Hexanol	85%		56-145%

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RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68034.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		76-120%
17060-07-0	1,2-Dichloroethane-D4	113%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	113%		78-117%

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Rafael Infante Méndez
IC # 1888
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ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 2M90392.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2M90392.D	1	01/04/17	SB	12/27/16	OP99497	E2M4011
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol [a]	ND	5.1	0.83	ug/l	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	5.1	0.90	ug/l	
120-83-2	2,4-Dichlorophenol [a]	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol [a]	ND	5.1	2.5	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	10	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	5.1	1.3	ug/l	
95-48-7	2-Methylphenol [a]	ND	2.0	0.90	ug/l	
	3&4-Methylphenol [a]	ND	2.0	0.89	ug/l	
88-75-5	2-Nitrophenol [a]	ND	5.1	0.97	ug/l	
100-02-7	4-Nitrophenol [a]	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.0	1.4	ug/l	
108-95-2	Phenol [a]	ND	2.0	0.40	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.1	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol [a]	ND	5.1	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol [a]	ND	5.1	0.93	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.1	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.41	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.66	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	0.41	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.56	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.34	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.1	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.1	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.1	0.44	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.65	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.49	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	33%		14-88%
4165-62-2	Phenol-d5	21%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	72%		39-149%
4165-60-0	Nitrobenzene-d5	58%		32-128%
321-60-8	2-Fluorobiphenyl	64%		35-119%
1718-51-0	Terphenyl-d14	75%		10-126%

(a) The acid spike standard was not added to the LCS. There is no sample left to reextract.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67749.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67749.D	1	12/30/16	SG	12/27/16	OP99497A	E3M3155
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.051	0.023	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.051	0.034	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.044	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.033	ug/l	
218-01-9	Chrysene	ND	0.10	0.026	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.037	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.038	ug/l	
91-20-3	Naphthalene	ND	0.10	0.030	ug/l	
123-91-1	1,4-Dioxane	ND	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		24-125%
321-60-8	2-Fluorobiphenyl	68%		19-127%
1718-51-0	Terphenyl-d14	64%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107980.D	1	12/29/16	XPL	n/a	n/a	GGH5599
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	97%		56-145%
111-27-3	Hexanol	79%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	RSK-175	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA56675.D	1	12/30/16	LM	n/a	n/a	GAA1104
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.48	0.11	0.036	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
		Percent Solids:	n/a
Project:	BMSMC, Building 5 Area, PR		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	2130	100	12	ug/l	1	12/28/16	12/29/16	ND	SW846 6010C [1]	SW846 3010A [2]
Manganese	74.7	15	0.39	ug/l	1	12/28/16	12/29/16	ND	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA41067
(2) Prep QC Batch: MP97875

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	MW-18		
Lab Sample ID:	JC34340-2	**Date Sampled:**	12/20/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
		Percent Solids:	n/a
Project:	BMSMC, Building 5 Area, PR		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	207	5.0	mg/l	1	12/28/16 21:50	CB	SM2320 B-11
Iron, Ferric [a]	2.0	0.30	mg/l	1	12/29/16 22:23	ND	SM3500FE B-11
Iron, Ferrous [b]	< 0.20	0.20	mg/l	1	12/24/16 12:48	YR	SM3500FE B-11
Nitrogen, Nitrate [c]	0.58	0.11	mg/l	1	01/03/17 12:49	BM	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.59	0.10	mg/l	1	01/03/17 12:49	BM	EPA 353.2/LACHAT
Nitrogen, Nitrite [d]	0.015	0.010	mg/l	1	12/23/16 23:10	HS	SM4500NO2 B-11
Sulfate	< 10	10	mg/l	1	01/07/17 06:13	JN	EPA 300/SW846 9056A
Sulfide	< 2.0	2.0	mg/l	1	12/27/16 10:48	MP	SM4500S2- F-11

(a) Calculated as: (Iron) - (Iron, Ferrous)
(b) Field analysis required. Received out of hold time and analyzed by request.
(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite) Nitrogen, Nitrite analysis done past holding time.
(d) Received and analyzed out of holding time.

RL = Reporting Limit

SGS Accutest

Report of Analysis

Client Sample ID:	FB122016		
Lab Sample ID:	JC34340-3	**Date Sampled:**	12/20/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68047.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		76-120%
17060-07-0	1,2-Dichloroethane-D4	113%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	115%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: M130548.D P110134.D

SGS Accutest

Report of Analysis

Client Sample ID:	FB122016		
Lab Sample ID:	JC34340-3	**Date Sampled:**	12/20/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M130548.D	1	01/04/17	KM	12/27/16	OP99497	EM5577
Run #2 [b]	P110134.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2	925 ml	1.0 ml

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol [a]	ND	5.5	0.90	ug/l	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	5.5	0.98	ug/l	
120-83-2	2,4-Dichlorophenol [a]	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol [a]	ND	5.5	2.7	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	5.5	1.4	ug/l	
95-48-7	2-Methylphenol [a]	ND	2.2	0.98	ug/l	
	3&4-Methylphenol [a]	ND	2.2	0.97	ug/l	
88-75-5	2-Nitrophenol [a]	ND	5.5	1.1	ug/l	
100-02-7	4-Nitrophenol [a]	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.4	1.5	ug/l	
108-95-2	Phenol [a]	ND	2.2	0.43	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.5	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol [a]	ND	5.5	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol [a]	ND	5.5	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.49	ug/l	
100-52-7	Benzaldehyde	ND	5.5	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.5	0.37	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB122016		
Lab Sample ID:	JC34340-3	**Date Sampled:**	12/20/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.71	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.5	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.54	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.5	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.5	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.5	0.48	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.5	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%	44%	14-88%
4165-62-2	Phenol-d5	28%	29%	10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB122016		
Lab Sample ID:	JC34340-3	**Date Sampled:**	12/20/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	93%	91%	39-149%
4165-60-0	Nitrobenzene-d5	70%	66%	32-128%
321-60-8	2-Fluorobiphenyl	71%	75%	35-119%
1718-51-0	Terphenyl-d14	83%	87%	10-126%

(a) The acid spike standard was not added to the LCS. Results are confirmed by reextraction outside the holding time.
(b) Confirmation run.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67750.D

SGS Accutest

Report of Analysis

Client Sample ID:	FB122016		
Lab Sample ID:	JC34340-3	**Date Sampled:**	12/20/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67750.D	1	12/30/16	SG	12/27/16	OP99497A	E3M3155
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.055	0.025	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.055	0.037	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.036	ug/l	
218-01-9	Chrysene	ND	0.11	0.029	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.042	ug/l	
91-20-3	Naphthalene	ND	0.11	0.032	ug/l	
123-91-1	1,4-Dioxane	ND	0.11	0.054	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		24-125%
321-60-8	2-Fluorobiphenyl	68%		19-127%
1718-51-0	Terphenyl-d14	73%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	FB122016		
Lab Sample ID:	JC34340-3	**Date Sampled:**	12/20/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107981.D	1	12/29/16	XPL	n/a	n/a	GGH5599
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	103%		56-145%
111-27-3	Hexanol	87%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4B68048.D

SGS Accutest

Report of Analysis

Client Sample ID:	EB122116		
Lab Sample ID:	JC34340-4	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68048.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		76-120%
17060-07-0	1,2-Dichloroethane-D4	115%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	115%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 2M90361.D

SGS Accutest

Report of Analysis

Client Sample ID:	EB122116		
Lab Sample ID:	JC34340-4	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M90361.D	1	01/03/17	AN	12/28/16	OP99513	E2M4010
Run #2							

	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.2	0.85	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.2	0.93	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.2	2.5	ug/l	
51-28-5	2,4-Dinitrophenol	ND	10	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.2	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.93	ug/l	
	3&4-Methylphenol	ND	2.1	0.92	ug/l	
88-75-5	2-Nitrophenol	ND	5.2	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.2	1.4	ug/l	
108-95-2	Phenol	ND	2.1	0.41	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.2	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.2	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.2	0.96	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.20	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.1	0.22	ug/l	
120-12-7	Anthracene	ND	1.0	0.22	ug/l	
1912-24-9	Atrazine	ND	2.1	0.47	ug/l	
100-52-7	Benzaldehyde	ND	5.2	0.30	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.36	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.42	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.48	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.25	ug/l	
106-47-8	4-Chloroaniline	ND	5.2	0.35	ug/l	
86-74-8	Carbazole	ND	1.0	0.24	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB122116		
Lab Sample ID:	JC34340-4	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.1	0.68	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.29	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.26	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.1	0.42	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.38	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.58	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	0.53	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.34	ug/l	
132-64-9	Dibenzofuran	ND	5.2	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.52	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.1	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.27	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.18	ug/l	
86-73-7	Fluorene	ND	1.0	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.34	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.51	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.9	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.41	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.35	ug/l	
78-59-1	Isophorone	ND	2.1	0.29	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.22	ug/l	
88-74-4	2-Nitroaniline	ND	5.2	0.29	ug/l	
99-09-2	3-Nitroaniline	ND	5.2	0.40	ug/l	
100-01-6	4-Nitroaniline	ND	5.2	0.46	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.67	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.50	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	0.23	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.23	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.1	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		14-88%
4165-62-2	Phenol-d5	26%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB122116		
Lab Sample ID:	JC34340-4	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	81%		39-149%
4165-60-0	Nitrobenzene-d5	64%		32-128%
321-60-8	2-Fluorobiphenyl	71%		35-119%
1718-51-0	Terphenyl-d14	92%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4M69349.D

SGS Accutest

Report of Analysis

Client Sample ID:	EB122116		
Lab Sample ID:	JC34340-4	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4M69349.D	1	12/29/16	SG	12/28/16	OP99513A	E4M3179
Run #2							

	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.052	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.052	0.035	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.045	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.034	ug/l	
218-01-9	Chrysene	ND	0.10	0.027	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.038	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.040	ug/l	
91-20-3	Naphthalene	ND	0.10	0.031	ug/l	
123-91-1	1,4-Dioxane	ND	0.10	0.051	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	59%		24-125%
321-60-8	2-Fluorobiphenyl	63%		19-127%
1718-51-0	Terphenyl-d14	87%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	EB122116		
Lab Sample ID:	JC34340-4	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107982.D	1	12/29/16	XPL	n/a	n/a	GGH5599
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	100%		56-145%
111-27-3	Hexanol	85%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	TB122016NRB		
Lab Sample ID:	JC34340-5	**Date Sampled:**	12/22/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68049.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		76-120%
17060-07-0	1,2-Dichloroethane-D4	115%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	116%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	TB122016RSD		
Lab Sample ID:	JC34340-6	**Date Sampled:**	12/22/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68065.D	1	01/03/17	HT	n/a	n/a	V4B2797
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		76-120%
17060-07-0	1,2-Dichloroethane-D4	107%		73-122%
2037-26-5	Toluene-D8	97%		84-119%
460-00-4	4-Bromofluorobenzene	115%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	JC34340-7	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68035.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		76-120%
17060-07-0	1,2-Dichloroethane-D4	113%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	110%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 2M90299.D M130549.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	JC34340-7	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M90299.D	1	12/30/16	CS	12/28/16	OP99513	E2M4007
Run #2	M130549.D	2	01/04/17	KM	12/28/16	OP99513	EM5577

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	10	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	JC34340-7	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
123-91-1	1,4-Dioxane	105 [a]	2.0	1.3	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	0.54	1.0	0.17	ug/l	J
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.26	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%	40%	14-88%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	JC34340-7	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	30%	28%	10-110%
118-79-6	2,4,6-Tribromophenol	89%	104%	39-149%
4165-60-0	Nitrobenzene-d5	61%	69%	32-128%
321-60-8	2-Fluorobiphenyl	72%	75%	35-119%
1718-51-0	Terphenyl-d14	71%	69%	10-126%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4M69350.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	JC34340-7	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4M69350.D	1	12/29/16	SG	12/28/16	OP99513A	E4M3179
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.050	0.023	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.050	0.033	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.043	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.033	ug/l	
218-01-9	Chrysene	ND	0.10	0.026	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.036	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.038	ug/l	
91-20-3	Naphthalene	ND	0.10	0.029	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	57%		24-125%
321-60-8	2-Fluorobiphenyl	63%		19-127%
1718-51-0	Terphenyl-d14	71%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1		
Lab Sample ID:	JC34340-7	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107983.D	1	12/29/16	XPL	n/a	n/a	GGH5599
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	84%		56-145%
111-27-3	Hexanol	79%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1 DUP		
Lab Sample ID:	JC34340-8	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68036.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		76-120%
17060-07-0	1,2-Dichloroethane-D4	114%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	108%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 5P34334.D 5P34357.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1 DUP		
Lab Sample ID:	JC34340-8	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P34334.D	1	12/30/16	SB	12/28/16	OP99514	E5P1725
Run #2	5P34357.D	5	12/30/16	AC	12/28/16	OP99514	E5P1726

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2	910 ml	1.0 ml

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	0.90	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.5	0.98	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.5	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.5	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.98	ug/l	
	3&4-Methylphenol	ND	2.2	0.97	ug/l	
88-75-5	2-Nitrophenol	ND	5.5	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.43	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.5	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.5	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.5	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.49	ug/l	
100-52-7	Benzaldehyde	ND	5.5	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	1.5	5.5	0.37	ug/l	J
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-1 DUP		
Lab Sample ID:	JC34340-8	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.71	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
123-91-1	1,4-Dioxane	220 [a]	5.5	3.6	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.5	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	3.8	2.2	1.8	ug/l	
206-44-0	Fluoranthene	0.50	1.1	0.19	ug/l	J
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.54	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.5	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.5	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.5	0.48	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.5	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%	59%	14-88%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-1 DUP		
Lab Sample ID:	JC34340-8	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	40%	40%	10-110%
118-79-6	2,4,6-Tribromophenol	86%	89%	39-149%
4165-60-0	Nitrobenzene-d5	77%	77%	32-128%
321-60-8	2-Fluorobiphenyl	77%	80%	35-119%
1718-51-0	Terphenyl-d14	77%	78%	10-126%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67737.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1 DUP		
Lab Sample ID:	JC34340-8	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67737.D	1	12/30/16	SG	12/28/16	OP99514A	E3M3154
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.055	0.025	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.055	0.037	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.036	ug/l	
218-01-9	Chrysene	ND	0.11	0.029	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.042	ug/l	
91-20-3	Naphthalene	ND	0.11	0.032	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		24-125%
321-60-8	2-Fluorobiphenyl	73%		19-127%
1718-51-0	Terphenyl-d14	70%		10-119%

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1888
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ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GH107984.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-1 DUP		
Lab Sample ID:	JC34340-8	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107984.D	1	12/29/16	XPL	n/a	n/a	GGH5599
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	66%		56-145%
111-27-3	Hexanol	61%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4B68038.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68038.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		76-120%
17060-07-0	1,2-Dichloroethane-D4	112%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	105%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 5P34335.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P34335.D	1	12/30/16	SB	12/28/16	OP99514	E5P1725
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.3	0.87	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.3	0.95	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.3	2.6	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.3	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.94	ug/l	
	3&4-Methylphenol	ND	2.1	0.94	ug/l	
88-75-5	2-Nitrophenol	ND	5.3	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.3	1.5	ug/l	
108-95-2	Phenol	ND	2.1	0.42	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.3	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.3	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.3	0.98	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.20	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.14	ug/l	
98-86-2	Acetophenone	ND	2.1	0.22	ug/l	
120-12-7	Anthracene	ND	1.1	0.22	ug/l	
1912-24-9	Atrazine	ND	2.1	0.48	ug/l	
100-52-7	Benzaldehyde	ND	5.3	0.31	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.36	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.22	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.43	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.49	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.25	ug/l	
106-47-8	4-Chloroaniline	ND	5.3	0.36	ug/l	
86-74-8	Carbazole	ND	1.1	0.24	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.1	0.69	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.30	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.26	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.1	0.43	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.39	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.59	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.51	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	0.54	ug/l	
123-91-1	1,4-Dioxane	19.3	1.1	0.70	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.35	ug/l	
132-64-9	Dibenzofuran	ND	5.3	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.53	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.1	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.35	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.52	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.0	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.41	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.35	ug/l	
78-59-1	Isophorone	ND	2.1	0.29	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.22	ug/l	
88-74-4	2-Nitroaniline	ND	5.3	0.29	ug/l	
99-09-2	3-Nitroaniline	ND	5.3	0.41	ug/l	
100-01-6	4-Nitroaniline	ND	5.3	0.47	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.68	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.51	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.23	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.1	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		14-88%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	29%		10-110%
118-79-6	2,4,6-Tribromophenol	71%		39-149%
4165-60-0	Nitrobenzene-d5	57%		32-128%
321-60-8	2-Fluorobiphenyl	59%		35-119%
1718-51-0	Terphenyl-d14	71%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67733.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67733.D	1	12/30/16	SG	12/28/16	OP99514A	E3M3154
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.053	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.053	0.035	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.046	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.035	ug/l	
218-01-9	Chrysene	ND	0.11	0.028	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.039	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.040	ug/l	
91-20-3	Naphthalene	ND	0.11	0.031	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	56%		24-125%
321-60-8	2-Fluorobiphenyl	55%		19-127%
1718-51-0	Terphenyl-d14	63%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GH107985.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107985.D	1	12/29/16	XPL	n/a	n/a	GGH5599
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	76%		56-145%
111-27-3	Hexanol	73%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	RSK-175	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA56676.D	1	12/30/16	LM	n/a	n/a	GAA1104
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	4.0	0.11	0.036	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
		Percent Solids:	n/a
Project:	BMSMC, Building 5 Area, PR		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	3320	100	12	ug/l	1	12/28/16	12/29/16	ND	SW846 6010C [1]	SW846 3010A [2]
Manganese	166	15	0.39	ug/l	1	12/28/16	12/29/16	ND	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA41067
(2) Prep QC Batch: MP97875

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	BR-2		
Lab Sample ID:	JC34340-9	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
		Percent Solids:	n/a
Project:	BMSMC, Building 5 Area, PR		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	289	5.0	mg/l	1	12/30/16 16:59	JA	SM2320 B-11
Iron, Ferric [a]	3.3	0.30	mg/l	1	12/29/16 22:26	ND	SM3500FE B-11
Iron, Ferrous [b]	< 0.20	0.20	mg/l	1	12/24/16 12:48	YR	SM3500FE B-11
Nitrogen, Nitrate [c]	< 0.11	0.11	mg/l	1	01/03/17 12:51	BM	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	01/03/17 12:51	BM	EPA 353.2/LACHAT
Nitrogen, Nitrite [d]	< 0.010	0.010	mg/l	1	12/23/16 23:10	HS	SM4500NO2 B-11
Sulfate	38.6	10	mg/l	1	01/07/17 06:37	JN	EPA 300/SW846 9056A
Sulfide	< 2.0	2.0	mg/l	1	12/27/16 10:48	MP	SM4500S2- F-11

(a) Calculated as: (Iron) - (Iron, Ferrous)
(b) Field analysis required. Received out of hold time and analyzed by request.
(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite) Nitrogen, Nitrite analysis done past holding time.
(d) Received and analyzed out of holding time.

RL = Reporting Limit

SGS Accutest

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	JC34340-10	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68039.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		76-120%
17060-07-0	1,2-Dichloroethane-D4	114%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	112%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 5P34336.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	JC34340-10	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P34336.D	1	12/30/16	SB	12/28/16	OP99514	E5P1725
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.1	0.83	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	0.90	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.1	2.5	ug/l	
51-28-5	2,4-Dinitrophenol	ND	10	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.1	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.90	ug/l	
	3&4-Methylphenol	ND	2.0	0.89	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	0.97	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.40	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.1	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	0.93	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.1	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.41	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	JC34340-10	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.66	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	0.41	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.56	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
123-91-1	1,4-Dioxane	27.6	1.0	0.66	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.34	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.1	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.1	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.1	0.44	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.65	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.49	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		14-88%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	JC34340-10	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	35%		10-110%
118-79-6	2,4,6-Tribromophenol	70%		39-149%
4165-60-0	Nitrobenzene-d5	74%		32-128%
321-60-8	2-Fluorobiphenyl	75%		35-119%
1718-51-0	Terphenyl-d14	83%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67734.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	JC34340-10	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67734.D	1	12/30/16	SG	12/28/16	OP99514A	E3M3154
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.051	0.023	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.051	0.034	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.044	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.033	ug/l	
218-01-9	Chrysene	ND	0.10	0.026	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.037	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.038	ug/l	
91-20-3	Naphthalene	ND	0.10	0.030	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		24-125%
321-60-8	2-Fluorobiphenyl	74%		19-127%
1718-51-0	Terphenyl-d14	77%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-3		
Lab Sample ID:	JC34340-10	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH108000.D	1	12/30/16	XPL	n/a	n/a	GGH5600
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	85%		56-145%
111-27-3	Hexanol	82%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-4		
Lab Sample ID:	JC34340-11	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68037.D	1	12/31/16	HT	n/a	n/a	V4B2796
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		76-120%
17060-07-0	1,2-Dichloroethane-D4	113%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	115%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-4		
Lab Sample ID:	JC34340-11	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P34345.D	1	12/30/16	SB	12/28/16	OP99514	E5P1725
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	0.90	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.5	0.98	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.5	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.5	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.98	ug/l	
	3&4-Methylphenol	ND	2.2	0.97	ug/l	
88-75-5	2-Nitrophenol	ND	5.5	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.43	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.5	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.5	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.5	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.49	ug/l	
100-52-7	Benzaldehyde	ND	5.5	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.5	0.37	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-4		
Lab Sample ID:	JC34340-11	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.71	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.5	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.54	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.5	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.5	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.5	0.48	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.5	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		14-88%
4165-62-2	Phenol-d5	37%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BR-4		
Lab Sample ID:	JC34340-11	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	86%		39-149%
4165-60-0	Nitrobenzene-d5	74%		32-128%
321-60-8	2-Fluorobiphenyl	72%		35-119%
1718-51-0	Terphenyl-d14	76%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4M69415.D

SGS Accutest

Report of Analysis

Client Sample ID:	BR-4		
Lab Sample ID:	JC34340-11	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4M69415.D	1	12/31/16	SG	12/28/16	OP99514A	E4M3182
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.055	0.025	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.055	0.037	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.036	ug/l	
218-01-9	Chrysene	ND	0.11	0.029	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.042	ug/l	
91-20-3	Naphthalene	ND	0.11	0.032	ug/l	
123-91-1	1,4-Dioxane	0.311	0.11	0.054	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	67%		24-125%
321-60-8	2-Fluorobiphenyl	66%		19-127%
1718-51-0	Terphenyl-d14	82%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	BR-4		
Lab Sample ID:	JC34340-11	**Date Sampled:**	12/21/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107999.D	1	12/30/16	XPL	n/a	n/a	GGH5600
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	82%		56-145%
111-27-3	Hexanol	81%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	FB122116		
Lab Sample ID:	JC34340-12	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68066.D	1	01/03/17	HT	n/a	n/a	V4B2797
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		76-120%
17060-07-0	1,2-Dichloroethane-D4	109%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	113%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 5P34346.D

SGS Accutest

Report of Analysis

Client Sample ID:	FB122116		
Lab Sample ID:	JC34340-12	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P34346.D	1	12/30/16	SB	12/28/16	OP99514	E5P1725
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.4	0.89	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.4	0.97	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.4	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.4	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.97	ug/l	
	3&4-Methylphenol	ND	2.2	0.96	ug/l	
88-75-5	2-Nitrophenol	ND	5.4	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.3	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.43	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.4	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.4	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.4	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.49	ug/l	
100-52-7	Benzaldehyde	ND	5.4	0.31	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.22	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.4	0.37	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB122116		
Lab Sample ID:	JC34340-12	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.71	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.30	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.60	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.55	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.4	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.54	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	1.9	2.2	1.8	ug/l	J
206-44-0	Fluoranthene	ND	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.35	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.53	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.0	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.42	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.4	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.4	0.42	ug/l	
100-01-6	4-Nitroaniline	ND	5.4	0.48	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.70	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.52	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.4	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.40	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		14-88%
4165-62-2	Phenol-d5	37%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB122116		
Lab Sample ID:	JC34340-12	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	84%		39-149%
4165-60-0	Nitrobenzene-d5	74%		32-128%
321-60-8	2-Fluorobiphenyl	75%		35-119%
1718-51-0	Terphenyl-d14	92%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67736.D

SGS Accutest

Report of Analysis

Client Sample ID:	FB122116		
Lab Sample ID:	JC34340-12	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67736.D	1	12/30/16	SG	12/28/16	OP99514A	E3M3154
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.054	0.025	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.054	0.036	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.047	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.036	ug/l	
218-01-9	Chrysene	ND	0.11	0.028	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.039	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.041	ug/l	
91-20-3	Naphthalene	ND	0.11	0.032	ug/l	
123-91-1	1,4-Dioxane	ND	0.11	0.053	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	73%		24-125%
321-60-8	2-Fluorobiphenyl	71%		19-127%
1718-51-0	Terphenyl-d14	85%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	FB122116		
Lab Sample ID:	JC34340-12	**Date Sampled:**	12/21/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107998.D	1	12/30/16	XPL	n/a	n/a	GGH5600
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	99%		56-145%
111-27-3	Hexanol	81%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	TB122116NR		
Lab Sample ID:	JC34340-13	**Date Sampled:**	12/21/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68067.D	1	01/03/17	HT	n/a	n/a	V4B2797
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		76-120%
17060-07-0	1,2-Dichloroethane-D4	113%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	113%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	TB122116RS		
Lab Sample ID:	JC34340-14	**Date Sampled:**	12/21/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68109.D	1	01/04/17	HT	n/a	n/a	V4B2799
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		76-120%
17060-07-0	1,2-Dichloroethane-D4	109%		73-122%
2037-26-5	Toluene-D8	104%		84-119%
460-00-4	4-Bromofluorobenzene	107%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	EB122216		
Lab Sample ID:	JC34340-15	**Date Sampled:**	12/22/16
Matrix:	AQ - Equipment Blank	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68069.D	1	01/03/17	HT	n/a	n/a	V4B2797
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		76-120%
17060-07-0	1,2-Dichloroethane-D4	112%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	115%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: P110196.D

SGS Accutest

Report of Analysis

Client Sample ID:	EB122216		
Lab Sample ID:	JC34340-15	**Date Sampled:**	12/22/16
Matrix:	AQ - Equipment Blank	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P110196.D	1	01/03/17	RL	12/29/16	OP99540	EP4893
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.24	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.24	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	0.38	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB122216		
Lab Sample ID:	JC34340-15	**Date Sampled:**	12/22/16
Matrix:	AQ - Equipment Blank	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.72	ug/l	
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%		14-88%
4165-62-2	Phenol-d5	24%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB122216		
Lab Sample ID:	JC34340-15	**Date Sampled:**	12/22/16
Matrix:	AQ - Equipment Blank	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	85%		39-149%
4165-60-0	Nitrobenzene-d5	60%		32-128%
321-60-8	2-Fluorobiphenyl	70%		35-119%
1718-51-0	Terphenyl-d14	82%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67752.D

SGS Accutest

Report of Analysis

Client Sample ID:	EB122216		
Lab Sample ID:	JC34340-15	**Date Sampled:**	12/22/16
Matrix:	AQ - Equipment Blank	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67752.D	1	12/30/16	SG	12/29/16	OP99540A	E3M3155
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.056	0.025	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.056	0.037	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.037	ug/l	
218-01-9	Chrysene	ND	0.11	0.029	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.042	ug/l	
91-20-3	Naphthalene	ND	0.11	0.033	ug/l	
123-91-1	1,4-Dioxane	ND	0.11	0.054	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		24-125%
321-60-8	2-Fluorobiphenyl	68%		19-127%
1718-51-0	Terphenyl-d14	75%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	EB122216		
Lab Sample ID:	JC34340-15	**Date Sampled:**	12/22/16
Matrix:	AQ - Equipment Blank	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107997.D	1	12/30/16	XPL	n/a	n/a	GGH5600
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	91%		56-145%
111-27-3	Hexanol	88%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	EB122216		
Lab Sample ID:	JC34340-15	**Date Sampled:**	12/22/16
Matrix:	AQ - Equipment Blank	**Date Received:**	12/23/16
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8G1635.D	1	01/03/17	JR	12/29/16	OP99539	G8G54
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0067	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0067	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0063	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0051	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0031	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0051	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0051	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0040	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0068	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0055	ug/l	
72-20-8	Endrin	ND	0.011	0.0056	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0058	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0057	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0056	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0055	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0048	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0042	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0073	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0063	ug/l	
8001-35-2	Toxaphene	ND	0.28	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	96%		26-132%
877-09-8	Tetrachloro-m-xylene	100%		26-132%
2051-24-3	Decachlorobiphenyl	30%		10-118%
2051-24-3	Decachlorobiphenyl	29%		10-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	RA-10D		
Lab Sample ID:	JC34340-16	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68061.D	1	01/03/17	HT	n/a	n/a	V4B2797
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		76-120%
17060-07-0	1,2-Dichloroethane-D4	112%		73-122%
2037-26-5	Toluene-D8	97%		84-119%
460-00-4	4-Bromofluorobenzene	105%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: P110152.D P110195.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA-10D		
Lab Sample ID:	JC34340-16	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P110152.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
Run #2	P110195.D	50	01/03/17	RL	12/29/16	OP99540	EP4893

	Initial Volume	Final Volume
Run #1	925 ml	1.0 ml
Run #2	925 ml	1.0 ml

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.4	0.89	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.4	0.96	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.4	2.6	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.4	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.96	ug/l	
	3&4-Methylphenol	ND	2.2	0.95	ug/l	
88-75-5	2-Nitrophenol	ND	5.4	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.3	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.42	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.4	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.4	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.4	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.22	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.48	ug/l	
100-52-7	Benzaldehyde	ND	5.4	0.31	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.22	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.49	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.4	0.37	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA-10D		
Lab Sample ID:	JC34340-16	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.70	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.30	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.60	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.51	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.55	ug/l	
123-91-1	1,4-Dioxane	1520 [a]	54	36	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.4	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.54	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.35	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.53	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.0	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.42	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.4	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.4	0.42	ug/l	
100-01-6	4-Nitroaniline	ND	5.4	0.48	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.69	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.52	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.4	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.40	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%	0% [b]	14-88%

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA-10D		
Lab Sample ID:	JC34340-16	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	30%	0% [b]	10-110%
118-79-6	2,4,6-Tribromophenol	96%	0% [b]	39-149%
4165-60-0	Nitrobenzene-d5	71%	0% [b]	32-128%
321-60-8	2-Fluorobiphenyl	79%	0% [b]	35-119%
1718-51-0	Terphenyl-d14	87%	0% [b]	10-126%

(a) Result is from Run# 2
(b) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 3M67751.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA-10D		
Lab Sample ID:	JC34340-16	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67751.D	1	12/30/16	SG	12/29/16	OP99540A	E3M3155
Run #2							

	Initial Volume	Final Volume
Run #1	925 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
56-55-3	Benzo(a)anthracene	ND	0.054	0.025	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.054	0.036	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.047	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.036	ug/l	
218-01-9	Chrysene	ND	0.11	0.028	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.039	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.041	ug/l	
91-20-3	Naphthalene	0.236	0.11	0.032	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	100%		24-125%
321-60-8	2-Fluorobiphenyl	86%		19-127%
1718-51-0	Terphenyl-d14	81%		10-119%

JUNTA ASOCIADO DE PUERTO RICO
Isael Infante Méndez
IC # 1888
QUÍMICO LICENCIADO

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	RA-10D		
Lab Sample ID:	JC34340-16	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH107994.D	1	12/30/16	XPL	n/a	n/a	GGH5600
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	89%		56-145%
111-27-3	Hexanol	85%		56-145%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	RA-10D		
Lab Sample ID:	JC34340-16	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8G1631.D	1	01/03/17	JR	12/29/16	OP99539	G8G54
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0067	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0067	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0063	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0051	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0031	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0051	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0051	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0040	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0068	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0055	ug/l	
72-20-8	Endrin	ND	0.011	0.0056	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0058	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0057	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0056	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0055	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0048	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0042	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0073	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0063	ug/l	
8001-35-2	Toxaphene	ND	0.28	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	91%		26-132%
877-09-8	Tetrachloro-m-xylene	91%		26-132%
2051-24-3	Decachlorobiphenyl	80%		10-118%
2051-24-3	Decachlorobiphenyl	70%		10-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	TB122216NRA		
Lab Sample ID:	JC34340-17	**Date Sampled:**	12/22/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B68070.D	1	01/03/17	HT	n/a	n/a	V4B2797
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
106-99-0	1,3-Butadiene	ND	5.0	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		76-120%
17060-07-0	1,2-Dichloroethane-D4	112%		73-122%
2037-26-5	Toluene-D8	97%		84-119%
460-00-4	4-Bromofluorobenzene	116%		78-117%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 8G1664.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW-20S		
Lab Sample ID:	JC34340-18	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8G1664.D	1	01/04/17	JR	12/29/16	OP99539	G8G54
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.010	0.0060	ug/l	
319-84-6	alpha-BHC	ND	0.010	0.0060	ug/l	
319-85-7	beta-BHC	ND	0.010	0.0057	ug/l	
319-86-8	delta-BHC	ND	0.010	0.0046	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.010	0.0028	ug/l	
5103-71-9	alpha-Chlordane	ND	0.010	0.0046	ug/l	
5103-74-2	gamma-Chlordane	ND	0.010	0.0046	ug/l	
60-57-1	Dieldrin	ND	0.010	0.0036	ug/l	
72-54-8	4,4'-DDD	ND	0.010	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.010	0.0062	ug/l	
50-29-3	4,4'-DDT	ND	0.010	0.0050	ug/l	
72-20-8	Endrin	ND	0.010	0.0050	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.010	0.0053	ug/l	
7421-93-4	Endrin aldehyde	ND	0.010	0.0051	ug/l	
53494-70-5	Endrin ketone	ND	0.010	0.0051	ug/l	
959-98-8	Endosulfan-I	ND	0.010	0.0050	ug/l	
33213-65-9	Endosulfan-II	ND	0.010	0.0043	ug/l	
76-44-8	Heptachlor	ND	0.010	0.0038	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.010	0.0065	ug/l	
72-43-5	Methoxychlor	ND	0.020	0.0057	ug/l	
8001-35-2	Toxaphene	ND	0.25	0.18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	96%		26-132%
877-09-8	Tetrachloro-m-xylene	102%		26-132%
2051-24-3	Decachlorobiphenyl	49%		10-118%
2051-24-3	Decachlorobiphenyl	47%		10-118%

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-20D		
Lab Sample ID:	JC34340-19	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8G1665.D	1	01/04/17	JR	12/29/16	OP99539	G8G54
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0067	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0067	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0063	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0051	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0031	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0051	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0051	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0040	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0068	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0055	ug/l	
72-20-8	Endrin	ND	0.011	0.0056	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0058	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0057	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0056	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0055	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0048	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0042	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0073	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0063	ug/l	
8001-35-2	Toxaphene	ND	0.28	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		26-132%
877-09-8	Tetrachloro-m-xylene	87%		26-132%
2051-24-3	Decachlorobiphenyl	59%		10-118%
2051-24-3	Decachlorobiphenyl	59%		10-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	RA-10S		
Lab Sample ID:	JC34340-20	**Date Sampled:**	12/22/16
Matrix:	AQ - Ground Water	**Date Received:**	12/23/16
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8G1666.D	1	01/04/17	JR	12/29/16	OP99539	G8G54
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0067	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0067	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0063	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0051	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0031	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0051	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0051	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0040	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0068	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0055	ug/l	
72-20-8	Endrin	ND	0.011	0.0056	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0058	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0057	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0056	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0055	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0048	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0042	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0073	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0063	ug/l	
8001-35-2	Toxaphene	ND	0.28	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	103%		26-132%
877-09-8	Tetrachloro-m-xylene	110%		26-132%
2051-24-3	Decachlorobiphenyl	79%		10-118%
2051-24-3	Decachlorobiphenyl	73%		10-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	FB122216		
Lab Sample ID:	JC34340-21	**Date Sampled:**	12/22/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/23/16
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8G1667.D	1	01/04/17	JR	12/29/16	OP99539	G8G54
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0067	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0067	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0063	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0051	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0031	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0051	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0051	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0040	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0068	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0055	ug/l	
72-20-8	Endrin	ND	0.011	0.0056	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0058	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0057	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0056	ug/l	
959-98-8	Endosulfan-I	ND	0.011	0.0055	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0048	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0042	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0073	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0063	ug/l	
8001-35-2	Toxaphene	ND	0.28	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	90%		26-132%
877-09-8	Tetrachloro-m-xylene	95%		26-132%
2051-24-3	Decachlorobiphenyl	61%		10-118%
2051-24-3	Decachlorobiphenyl	57%		10-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4B68062.D 4B68063.D

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC34340
Account: AMANYWP Anderson, Mulholland & Associates
Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC34340-16MS	4B68062.D	1	01/03/17	HT	n/a	n/a	V4B2797
JC34340-16MSD	4B68063.D	1	01/03/17	HT	n/a	n/a	V4B2797
JC34340-16	4B68061.D	1	01/03/17	HT	n/a	n/a	V4B2797

The QC reported here applies to the following samples: **Method:** SW846 8260C

JC34340-6, JC34340-12, JC34340-13, JC34340-15, JC34340-16, JC34340-17

CAS No.	Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
106-99-0	1,3-Butadiene	ND		50	29.5	59	50	30.3	61	3	10-167/20

CAS No.	Surrogate Recoveries	MS	MSD	JC34340-16	Limits
1868-53-7	Dibromofluoromethane	106%	105%	105%	76-120%
17060-07-0	1,2-Dichloroethane-D4	107%	108%	112%	73-122%
2037-26-5	Toluene-D8	100%	99%	97%	84-119%
460-00-4	4-Bromofluorobenzene	100%	100%	105%	78-117%

* = Outside of Control Limits.

Raw Data: P110153.D P110154.D

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC34340
Account: AMANYWP Anderson, Mulholland & Associates
Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99540-MS	P110153.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
OP99540-MSD	P110154.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
JC34340-16	P110152.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
JC34340-16	P110195.D	50	01/03/17	RL	12/29/16	OP99540	EP4893

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC34340-15, JC34340-16

CAS No.	Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
95-57-8	2-Chlorophenol	ND		54.1	31.3	58	51.3	30.9	60	1	49-110/20
59-50-7	4-Chloro-3-methyl phenol	ND		54.1	37.7	70	51.3	36.5	71	3	44-121/18
120-83-2	2,4-Dichlorophenol	ND		54.1	41.8	77	51.3	40.5	79	3	42-120/19
105-67-9	2,4-Dimethylphenol	ND		54.1	40.7	75	51.3	39.4	77	3	33-132/23
51-28-5	2,4-Dinitrophenol	ND		108	102	94	103	98.6	96	3	21-145/26
534-52-1	4,6-Dinitro-o-cresol	ND		54.1	49.0	91	51.3	45.7	89	7	25-134/27
95-48-7	2-Methylphenol	ND		54.1	30.0	56	51.3	30.5	59	2	47-112/18
	3&4-Methylphenol	ND		54.1	29.0	54	51.3	28.3	55	2	44-113/19
88-75-5	2-Nitrophenol	ND		54.1	36.2	67	51.3	35.4	69	2	45-118/20
100-02-7	4-Nitrophenol	ND		54.1	34.0	63	51.3	33.6	66	1	23-144/28
87-86-5	Pentachlorophenol	ND		54.1	54.7	101	51.3	50.7	99	8	25-151/25
108-95-2	Phenol	ND		54.1	18.2	34	51.3	17.9	35	2	22-100/22
58-90-2	2,3,4,6-Tetrachlorophenol	ND		54.1	47.0	87	51.3	45.7	89	3	44-122/21
95-95-4	2,4,5-Trichlorophenol	ND		54.1	44.3	82	51.3	43.1	84	3	51-124/20
88-06-2	2,4,6-Trichlorophenol	ND		54.1	45.4	84	51.3	43.7	85	4	53-120/21
83-32-9	Acenaphthene	ND		54.1	40.0	74	51.3	37.8	74	6	52-120/23
208-96-8	Acenaphthylene	ND		54.1	36.5	68	51.3	34.3	67	6	50-101/22
98-86-2	Acetophenone	ND		54.1	37.2	69	51.3	35.8	70	4	31-141/23
120-12-7	Anthracene	ND		54.1	41.8	77	51.3	39.0	76	7	54-117/22
1912-24-9	Atrazine	ND		54.1	52.6	97	51.3	49.5	97	6	42-152/23
100-52-7	Benzaldehyde	ND		54.1	30.0	56	51.3	29.4	57	2	10-164/30
56-55-3	Benzo(a)anthracene	ND		54.1	42.8	79	51.3	40.2	78	6	40-123/24
50-32-8	Benzo(a)pyrene	ND		54.1	41.4	77	51.3	39.6	77	4	41-127/25
205-99-2	Benzo(b)fluoranthene	ND		54.1	43.5	80	51.3	41.7	81	4	39-127/27
191-24-2	Benzo(g,h,i)perylene	ND		54.1	35.3	65	51.3	33.4	65	6	34-128/28
207-08-9	Benzo(k)fluoranthene	ND		54.1	42.2	78	51.3	39.4	77	7	39-122/26
101-55-3	4-Bromophenyl phenyl ether	ND		54.1	43.9	81	51.3	40.3	79	9	51-124/23
85-68-7	Butyl benzyl phthalate	ND		54.1	35.2	65	51.3	33.2	65	6	21-146/28
92-52-4	1,1'-Biphenyl	ND		54.1	37.4	69	51.3	35.3	69	6	27-142/23
91-58-7	2-Chloronaphthalene	ND		54.1	37.9	70	51.3	35.7	70	6	51-109/23
106-47-8	4-Chloroaniline	ND		54.1	22.2	41	51.3	20.5	40	8	10-110/55
86-74-8	Carbazole	ND		54.1	39.4	73	51.3	37.3	73	5	52-116/22
105-60-2	Caprolactam	ND		54.1	10.9	20	51.3	11.1	22	2	10-106/34
218-01-9	Chrysene	ND		54.1	39.8	74	51.3	[illegible]	[illegible]	5	41-128/24
111-91-1	bis(2-Chloroethoxy)methane	ND		54.1	33.1	61	51.3	[illegible]	[illegible]	7	46-120/24
111-44-4	bis(2-Chloroethyl)ether	ND		54.1	32.6	60	51.3	33.7	[illegible]	3	42-123/28

* = Outside of Control Limits.

8.3.4 8

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC34340
Account: AMANYWP Anderson, Mulholland & Associates
Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99540-MS	P110153.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
OP99540-MSD	P110154.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
JC34340-16	P110152.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
JC34340-16	P110195.D	50	01/03/17	RL	12/29/16	OP99540	EP4893

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC34340-15, JC34340-16

CAS No.	Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
108-60-1	bis(2-Chloroisopropyl)ether	ND		54.1	31.4	58	51.3	31.2	61	1	41-117/25
7005-72-3	4-Chlorophenyl phenyl ether	ND		54.1	45.6	84	51.3	43.0	84	6	48-121/21
121-14-2	2,4-Dinitrotoluene	ND		54.1	47.3	88	51.3	46.4	90	2	54-123/27
606-20-2	2,6-Dinitrotoluene	ND		54.1	44.9	83	51.3	42.7	83	5	55-125/26
91-94-1	3,3'-Dichlorobenzidine	ND		108	36.7	34	103	27.1	26	30	10-107/47
123-91-1	1,4-Dioxane	1520 [b]		54.1	1580	0* [a]	51.3	1800	0* [a]	13	10-119/31
53-70-3	Dibenzo(a,h)anthracene	ND		54.1	37.2	69	51.3	34.8	68	7	35-130/27
132-64-9	Dibenzofuran	ND		54.1	39.7	73	51.3	38.5	75	3	53-112/22
84-74-2	Di-n-butyl phthalate	ND		54.1	39.4	73	51.3	37.4	73	5	38-129/23
117-84-0	Di-n-octyl phthalate	ND		54.1	36.8	68	51.3	34.7	68	6	35-145/26
84-66-2	Diethyl phthalate	ND		54.1	40.9	76	51.3	39.5	77	3	16-136/30
131-11-3	Dimethyl phthalate	ND		54.1	41.0	76	51.3	40.0	78	2	10-143/39
117-81-7	bis(2-Ethylhexyl)phthalate	ND		54.1	34.0	63	51.3	32.1	63	6	34-141/28
206-44-0	Fluoranthene	ND		54.1	45.8	85	51.3	42.8	83	7	47-123/24
86-73-7	Fluorene	ND		54.1	43.6	81	51.3	41.6	81	5	56-117/22
118-74-1	Hexachlorobenzene	ND		54.1	44.1	82	51.3	40.6	79	8	46-125/24
87-68-3	Hexachlorobutadiene	ND		54.1	37.5	69	51.3	36.9	72	2	26-121/24
77-47-4	Hexachlorocyclopentadiene	ND		108	64.3	59	103	63.4	62	1	10-133/31
67-72-1	Hexachloroethane	ND		54.1	33.8	63	51.3	35.0	68	3	35-111/26
193-39-5	Indeno(1,2,3-cd)pyrene	ND		54.1	39.8	74	51.3	37.3	73	6	32-130/30
78-59-1	Isophorone	ND		54.1	34.9	65	51.3	33.3	65	5	47-126/23
90-12-0	1-Methylnaphthalene	ND		54.1	36.1	67	51.3	34.2	67	5	34-124/25
91-57-6	2-Methylnaphthalene	ND		54.1	37.4	69	51.3	35.1	68	6	34-123/24
88-74-4	2-Nitroaniline	ND		54.1	39.9	74	51.3	40.0	78	0	46-137/23
99-09-2	3-Nitroaniline	ND		54.1	24.4	45	51.3	26.5	52	8	10-110/50
100-01-6	4-Nitroaniline	ND		54.1	37.1	69	51.3	34.3	67	8	38-118/25
98-95-3	Nitrobenzene	ND		54.1	34.9	65	51.3	33.0	64	6	35-130/25
621-64-7	N-Nitroso-di-n-propylamine	ND		54.1	34.3	63	51.3	33.2	65	3	45-123/22
86-30-6	N-Nitrosodiphenylamine	ND		54.1	39.7	73	51.3	36.7	72	8	46-123/24
85-01-8	Phenanthrene	ND		54.1	41.8	77	51.3	39.4	77	6	48-121/23
129-00-0	Pyrene	ND		54.1	39.8	74	51.3	37.9	74	5	43-124/26
95-94-3	1,2,4,5-Tetrachlorobenzene	ND		54.1	48.5	90	51.3	45.2	88	7	25-142/24

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC34340
Account: AMANYWP Anderson, Mulholland & Associates
Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99540-MS	P110153.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
OP99540-MSD	P110154.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
JC34340-16	P110152.D	1	12/30/16	JJ	12/29/16	OP99540	EP4891
JC34340-16	P110195.D	50	01/03/17	RL	12/29/16	OP99540	EP4893

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC34340-15, JC34340-16

CAS No.	Surrogate Recoveries	MS	MSD	JC34340-16	JC34340-16	Limits
367-12-4	2-Fluorophenol	44%	47%	41%	0%* c	14-88%
4165-62-2	Phenol-d5	34%	34%	30%	0%* c	10-110%
118-79-6	2,4,6-Tribromophenol	86%	86%	96%	0%* c	39-149%
4165-60-0	Nitrobenzene-d5	65%	66%	71%	0%* c	32-128%
321-60-8	2-Fluorobiphenyl	74%	73%	79%	0%* c	35-119%
1718-51-0	Terphenyl-d14	67%	63%	87%	0%* c	10-126%

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.
(c) Outside control limits due to dilution.

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IC # 1898
QUIMICO LICENCIADO

* = Outside of Control Limits.

8.3.4

8

Raw Data: 3M67757.D 3M67758.D

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC34340
Account: AMANYWP Anderson, Mulholland & Associates
Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99540A-MS	3M67757.D	1	12/31/16	SG	12/29/16	OP99540A	E3M3155
OP99540A-MSD	3M67758.D	1	12/31/16	SG	12/29/16	OP99540A	E3M3155
JC34340-16	3M67751.D	1	12/30/16	SG	12/29/16	OP99540A	E3M3155

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

JC34340-15, JC34340-16

CAS No.	Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
56-55-3	Benzo(a)anthracene	ND		1.03	0.773	75	1.05	0.591	56	27	25-135/33
50-32-8	Benzo(a)pyrene	ND		1.03	0.675	66	1.05	0.420	40	47* [a]	10-116/38
205-99-2	Benzo(b)fluoranthene	ND		1.03	0.756	74	1.05	0.549	52	32	10-131/40
207-08-9	Benzo(k)fluoranthene	ND		1.03	0.712	69	1.05	0.481	46	39	10-120/45
218-01-9	Chrysene	ND		1.03	0.740	72	1.05	0.576	55	25	31-125/33
53-70-3	Dibenzo(a,h)anthracene	ND		1.03	0.557	54	1.05	0.352	33	45	10-116/48
193-39-5	Indeno(1,2,3-cd)pyrene	ND		1.03	0.515	50	1.05	0.314	30	48	10-116/48
91-20-3	Naphthalene	0.236		1.03	0.875	62	1.05	0.730	47	18	23-140/36
123-91-1	1,4-Dioxane	1670	EB	1.03	1240	0* [b]	1.05	1450	0* [b]	16	20-160/30

CAS No.	Surrogate Recoveries	MS	MSD	JC34340-16	Limits
4165-60-0	Nitrobenzene-d5	79%	66%	100%	24-125%
321-60-8	2-Fluorobiphenyl	68%	59%	86%	19-127%
1718-51-0	Terphenyl-d14	66%	46%	81%	10-119%

(a) Analytical precision exceeds in-house control limits.
(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

8.3.8

Raw Data: GH107995.D GH107996.D

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC34340
Account: AMANYWP Anderson, Mulholland & Associates
Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC34340-16MS	GH107995.D	1	12/30/16	XPL	n/a	n/a	GGH5600
JC34340-16MSD	GH107996.D	1	12/30/16	XPL	n/a	n/a	GGH5600
JC34340-16	GH107994.D	1	12/30/16	XPL	n/a	n/a	GGH5600

The QC reported here applies to the following samples: **Method:** SW846-8015C (DAI)

JC34340-10, JC34340-11, JC34340-12, JC34340-15, JC34340-16

CAS No.	Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
64-17-5	Ethanol	ND		5000	4400	88	5000	5180	104	16	58-145/27
78-83-1	Isobutyl Alcohol	ND		5000	4800	96	5000	5110	102	6	69-131/25
67-63-0	Isopropyl Alcohol	ND		5000	4430	89	5000	4700	94	6	70-133/28
71-23-8	n-Propyl Alcohol	ND		5000	4690	94	5000	5200	104	10	66-137/29
71-36-3	n-Butyl Alcohol	ND		5000	4230	85	5000	4530	91	7	63-131/25
78-92-2	sec-Butyl Alcohol	ND		5000	5370	107	5000	5700	114	6	64-136/25
67-56-1	Methanol	ND		5000	4110	82	5000	4670	93	13	48-148/34

CAS No.	Surrogate Recoveries	MS	MSD	JC34340-16	Limits
111-27-3	Hexanol	88%	87%	89%	56-145%
111-27-3	Hexanol	85%	88%	85%	56-145%

10.4.2 10

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IC # 1888
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* = Outside of Control Limits.

Raw Data: 8G1632.D 8G1633.D

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC34340
Account: AMANYWP Anderson, Mulholland & Associates
Project: BMSMC, Building 5 Area, PR

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99539-MS	8G1632.D	1	01/03/17	JR	12/29/16	OP99539	G8G54
OP99539-MSD	8G1633.D	1	01/03/17	JR	12/29/16	OP99539	G8G54
JC34340-16	8G1631.D	1	01/03/17	JR	12/29/16	OP99539	G8G54

The QC reported here applies to the following samples: **Method:** SW846 8081B

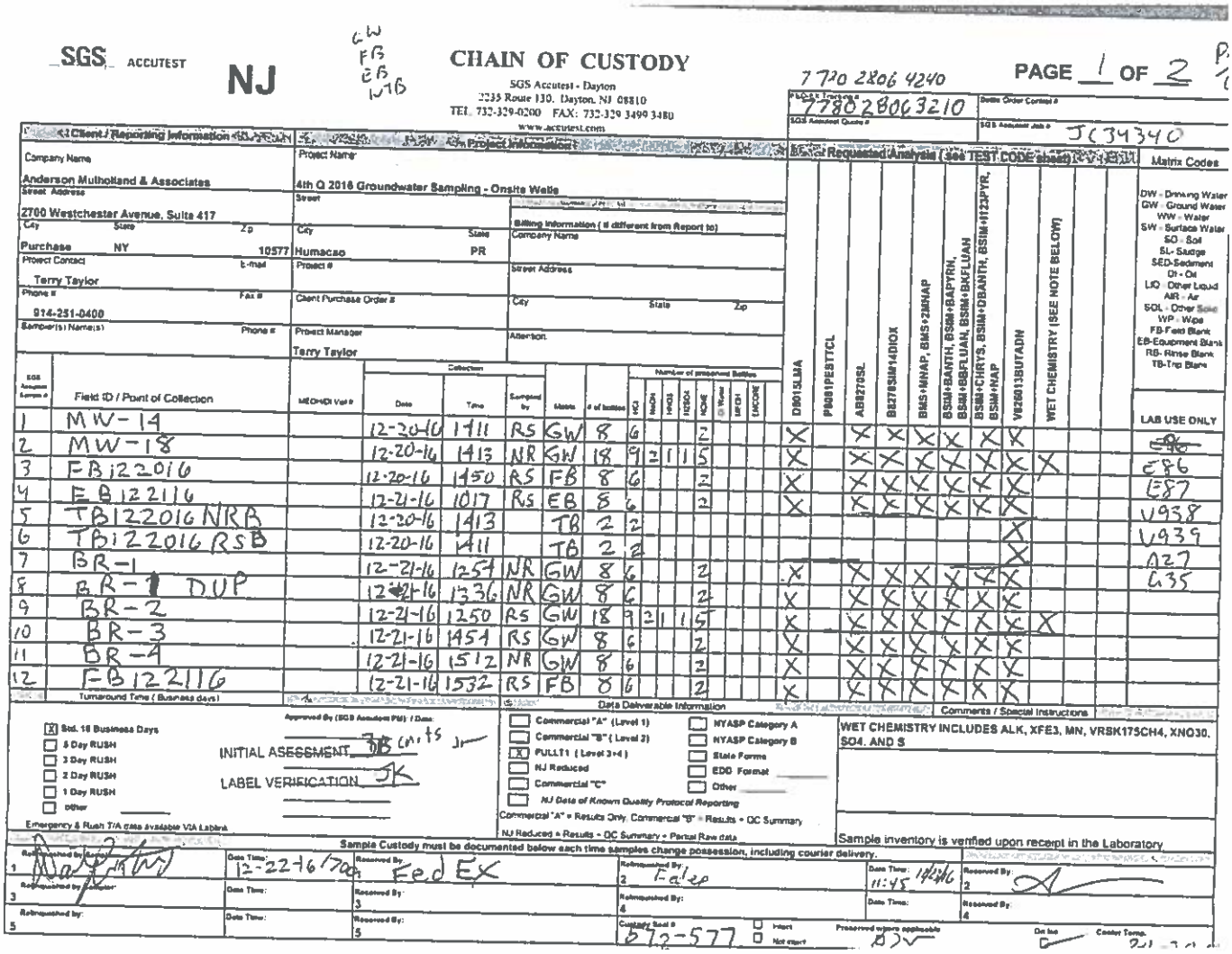
JC34340-15, JC34340-16, JC34340-18, JC34340-19, JC34340-20, JC34340-21

CAS No.	Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
309-00-2	Aldrin	ND		0.25	0.26	104	0.25	0.26	104	0	37-159/40
319-84-6	alpha-BHC	ND		0.25	0.28	112	0.25	0.28	112	0	37-164/37
319-85-7	beta-BHC	ND		0.25	0.27	108	0.25	0.27	108	0	46-151/36
319-86-8	delta-BHC	ND		0.25	0.30	120	0.25	0.31	124	3	32-168/36
58-89-9	gamma-BHC (Lindane)	ND		0.25	0.29	116	0.25	0.29	116	0	44-160/37
5103-71-9	alpha-Chlordane	ND		0.25	0.39	156	0.25	0.38	152	3	38-160/35
5103-74-2	gamma-Chlordane	ND		0.25	0.29	116	0.25	0.29	116	0	39-157/37
60-57-1	Dieldrin	ND		0.25	0.30	120	0.25	0.30	120	0	42-161/36
72-54-8	4,4'-DDD	ND		0.25	0.30	120	0.25	0.32	128	6	40-161/36
72-55-9	4,4'-DDE	ND		0.25	0.25	100	0.25	0.26	104	4	34-158/36
50-29-3	4,4'-DDT	ND		0.25	0.16	64	0.25	0.16	64	0	41-173/33
72-20-8	Endrin	ND		0.25	0.29	116	0.25	0.29	116	0	44-166/35
1031-07-8	Endosulfan sulfate	ND		0.25	0.29	116	0.25	0.30	120	3	46-161/36
7421-93-4	Endrin aldehyde	ND		0.25	0.30	120	0.25	0.27	108	11	34-149/36
53494-70-5	Endrin ketone	ND		0.25	0.28	112	0.25	0.28	112	0	44-157/36
959-98-8	Endosulfan-I	ND		0.25	0.29	116	0.25	0.30	120	3	43-154/35
33213-65-9	Endosulfan-II	ND		0.25	0.30	120	0.25	0.31	124	3	40-162/35
76-44-8	Heptachlor	ND		0.25	0.27	108	0.25	0.27	108	0	33-153/37
1024-57-3	Heptachlor epoxide	ND		0.25	0.29	116	0.25	0.29	116	0	45-154/37
72-43-5	Methoxychlor	ND		0.25	0.26	104	0.25	0.25	100	4	48-169/32
8001-35-2	Toxaphene	ND			ND			ND		nc	50-150/30

CAS No.	Surrogate Recoveries	MS	MSD	JC34340-16	Limits
877-09-8	Tetrachloro-m-xylene	97%	94%	91%	26-132%
877-09-8	Tetrachloro-m-xylene	96%	94%	91%	26-132%
2051-24-3	Decachlorobiphenyl	63%	75%	80%	10-118%
2051-24-3	Decachlorobiphenyl	49%	63%	70%	10-118%

* = Outside of Control Limits.

12.3.1 12



SGS ACCUTEST **NJ**

GW FB EB MB

CHAIN OF CUSTODY

SGS Accutest - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329 3499 3480
www.accutest.com

7720 2806 4240

PAGE 1 OF 2

SGS Accutest Quote # 7780280G3210

SGS Accutest Job # JC34340

Client / Reporting Information

Company Name: Anderson Mulholland & Associates
Street Address: 2700 Westchester Avenue, Suite 417
City: Purchase State: NY Zip: 10577
Project Contact: Terry Taylor e-mail:
Phone #: 914-251-0400 Fax #:
Sampler(s) Name(s): Phone #:

Project Information

Project Name: 4th Q 2016 Groundwater Sampling - Onsite Wells
Street:
City: Humacao State: PR
Project #:
Client Purchase Order #:
Project Manager: Terry Taylor

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: VOA	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	EnCore	D8015LMA	P8081PESTTCL	ABN270SL	B8270SIM14DIOX	BMS+MNAP, BMS+2MNAP	BSIM+BANTH, BSIM+BAPYRN, BSIM+BBFLUAN, BSIM+BKFLUAN	BSIM+CHRYS, BSIM+DBANTH, BSIM+I123PYR, BSIM+NAP	V8260113BUTADN	WET CHEMISTRY (SEE NOTE BELOW)			LAB USE ONLY
1	MW-14		12-20-16	1411	RS	GW	8	6				2				X		X	X	X	X	X	X			
2	MW-18		12-20-16	1413	NR	GW	18	9	2	1	1	5				X		X	X	X	X	X	X	X		
3	FB122016		12-20-16	1450	RS	FB	8	6				2				X		X	X	X	X	X	X			
4	EB122116		12-21-16	1017	RS	EB	8	6				2				X		X	X	X	X	X	X			
5	TB122016NRB		12-20-16	1413		TB	2	2															X			
6	TB122016RSB		12-20-16	1411		TB	2	2															X			
7	BR-1		12-21-16	1254	NR	GW	8	6				2				X		X	X	X	X	X	X			
8	BR-1 DUP		12-21-16	1336	NR	GW	8	6				2				X		X	X	X	X	X	X			
9	BR-2		12-21-16	1250	RS	GW	18	9	2	1	1	5				X		X	X	X	X	X	X	X		
10	BR-3		12-21-16	1451	RS	GW	8	6				2				X		X	X	X	X	X	X			
11	BR-4		12-21-16	1512	NR	GW	8	6				2				X		X	X	X	X	X	X			
12	FB122116		12-21-16	1532	RS	FB	8	6				2				X		X	X	X	X	X	X			

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] Other

Emergency & Rush T/A data available VIA Labnet

Approved By (SGS Accutest PM) / Date:

INITIAL ASSESSMENT JB 12/15 Jr

LABEL VERIFICATION JK

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULL1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

WET CHEMISTRY INCLUDES ALK, XFE3, MN, VRSK175CH4, XNO30, SO4, AND S

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by	Date Time	Received By	Relinquished By	Date Time	Received By
1		12-22-16 1700	Fed Ex	2 Fedex	12/24/16 11:45	2
3			3	4		4
5			5	Custody Seal # 672-577 Intact / Not Intact	Preserved where applicable	On Ice / Cooler Temp.

SGS ACCUTEST **NJ**

CHAIN OF CUSTODY

PAGE 2 OF 2

SGS Accutest - Dayton
3235 Route 130, Dayton, NJ 08810
TEL 732-329-0200 FAX 732-329-3499/3480
www.accutest.com

FED-EX Tracking # 778820063210 | Bottle Order Control #
SGS Accutest Quote # | SGS Accutest Job # JC34340

Client / Reporting Information

Company Name: Anderson Mulholland & Associates
Street Address: 2700 Westchester Avenue, Suite 417
City: Purchase | State: NY | Zip: 10577
Project Contact: Terry Taylor | E-mail:
Phone #: 914-251-0400 | Fax #:
Sampler(s) Name(s): | Phone #:

Project Information

Project Name: 4th Q 2016 Groundwater Sampling - Onsite Wells
Street:
City: Humacao | State: PR
Project #:
Client Purchase Order #:
Project Manager: Terry Taylor

Billing Information (if different from Report to)
Company Name:
Street Address:
City: | State: | Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	H2SO4	NONE	DI Water	MEOH	ENCORE	D8015LMA	PR08PESTTCL	AB8270SL	BB270SIM1400IOX	BMS+2MNAP	BSIM+BANTH, BSIM+BAPYRN,	BSIM+BBFLUAN, BSIM+BKFLUAN	BSIM+CHRYS, BSIM+DBANTH, BSIM+I123PYR,	BSIM+NAP	VB26013BUTAON	WET CHEMISTRY (SEE NOTE BELOW)			Matrix Codes
13	TB122116NR		12-21-16	1512		TB	2	2																X				
14	TB122116RS		12-21-16	1454		TB	2	2																X				
15	EB12 2216		12-22-16	942	RS	EB	10	6			4				X	X	X	X	X	X	X	X	X	X				
	RA-10D		12-22-16	1239	NR	GW	10	6			4				X	X	X	X	X	X	X	X	X	X				
16	RA-10D MS		12-22-16	1409	NR	GW	10	6			4				X	X	X	X	X	X	X	X	X	X				
	RA-10D MSD		12-22-16	1445	NR	GW	10	6			4				X	X	X	X	X	X	X	X	X	X				
17	TB122216NRA		12-22-16	1445		TB	2	2																X				
18	MW-20S		12-22-16	1311	RS	GW	2				2					X												
19	MW-20D		12-22-16	1522	RS	GW	2				2					X												
20	RA-10S		12-22-16	1604	NR	GW	1				1					X												
21	FB122216		12-22-16	1420	RS	FB	1				1					X												

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

LAB USE ONLY

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available VIA Labnet

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULL T1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

WET CHEMISTRY INCLUDES ALK, XFE3, MN, VRSK175CH4, XNO30, SO4, AND S

Sample Inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date Time:	Received By:
1		12-22-16 0700	1 FedEx
2	Fedex	12/23/16 1145	2
3	Relinquished by Sampler:	Date Time:	3 Received By:
4	Relinquished By:	Date Time:	4 Received By:
5	Relinquished by:	Date Time:	5 Received By:

Custody Seal # 572-577 | Intact | Not Intact | Preserved where applicable | On Ice | Cooler Temp. 2.0 1.0

EXECUTIVE NARRATIVE

SDG No:	**JC34340**	Laboratory:	**Accutest, New Jersey**
Analysis:	**SW846-8260C**	Number of Samples:	**19**
Location:	BMSMC, Building 5 Area Humacao, PR		

SUMMARY: Nineteen (19) samples were analyzed for selected VOAs of the TCL list (1,3-butadiene) by method SW846-8260C. Samples were validated following USEPA Hazardous Waste Support Section SOP No. HW-33A Revision 0 SOM02.2. Low/Medium Volatile Data Validation. July, 2015.The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues:	**None**
Major:	**None**
Minor:	**None**

Critical findings:	**None**
Major findings:	**None**
Minor findings:	**None**

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888

Signature: Rafael Infante

Date: January 27, 2017

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC34340-1
Sample location: BMSMC Building 5 Area
Sampling date: 20-Dec-16
Matrix: Groundwater

METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-2
Sample location: BMSMC Building 5 Area
Sampling date: 20-Dec-16
Matrix: Groundwater

METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-3
Sample location: BMSMC Building 5 Area
Sampling date: 20-Dec-16
Matrix: AQ - Field Blank Water

METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-4
Sample location: BMSMC Building 5 Area
Sampling date: 20-Dec-16
Matrix: AQ - Equipment Blank

METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-5
Sample location: BMSMC Building 5 Area
Sampling date: 20-Dec-16
Matrix: AQ - Trip Blank Water
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-6
Sample location: BMSMC Building 5 Area
Sampling date: 20-Dec-16
Matrix: AQ - Trip Blank Water
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-7
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-8
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-9
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-10
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-11
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-12
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: AQ - Field Blank Water
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-13
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: AQ - Trip Blank Water
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-14
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: AQ - Trip Blank Water
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-15
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: AQ - Equipment Blank
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-16
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-17
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: AQ - Trip Blank Water
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	5.0	ug/l	1	-	U	Yes

Sample ID: JC34340-16MS
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	29.5	ug/l	1	-	-	Yes

Sample ID: JC34340-16MSD
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater
METHOD: 8260C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
1,3-butadiene	30.3	ug/l	1	-	-	Yes

DATA REVIEW WORKSHEETS

Project Number:_JC34340_____
Date:_____December_20-22,_2016_____
Shipping date:___December_16,_2016___
EPA Region:_____2_____

REVIEW OF VOLATILE ORGANIC PACKAGE
Low/Medium Volatile Data Validation

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA **Hazardous Waste Support Section SOP No. HW-33A Revision 0 SOM02.2. Low/Medium Volatile Data Validation**. July, 2015. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) __Accutest_____ data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: ____JC34340_____ Sample matrix: ___Groundwater_____
No. of Samples: _____19_____
Trip blank No.: _____JC34340-5;_JC34340-6;_JC34340-13;_JC34340-14;_JC34340-17____
Field blank No.: _____JC34340-3;_JC34340-12_____
Equipment blank No.:_____JC34340-4;_JC34340-15_____
Field duplicate No.:_____JC34340-7/JC34340-8_____

___X___ Data Completeness
___X___ Holding Times
___X___ GC/MS Tuning
___X___ Internal Standard Performance
___X___ Blanks
___X___ Surrogate Recoveries
___X___ Matrix Spike/Matrix Spike Duplicate
___X___ Laboratory Control Spikes
___X___ Field Duplicates
___X___ Calibrations
___X___ Compound Identifications
___X___ Compound Quantitation
___X___ Quantitation Limits

_OverallComments:___Selected_VOA_(1,3-Butadiene)_from_the_TCL_list_(SW846_8260C)_____
_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer: Rafael Infante
Date:___January_27,_2017_____

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were met __X__
Criteria were not met
and/or see below _____

HOLDING TIMES
The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
All samples analyzed within method recommended holding time. Samples properly preserved.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH $\leq$ 2, 4$\pm$ 2°C), no air bubbles.
Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.
Soil samples- 14 days from sample collection.
Cooler temperature (Criteria: 4 $\pm$ 2 °C): 5.4° C - OK

Actions

Aqueous samples

a. If there is no evidence that the samples were properly preserved (pH < 2, T = 4°C ± 2°C), but the samples were analyzed within the technical holding time [7 days from sample collection], no qualification of the data is necessary.
b. If there is no evidence that the samples were properly preserved, and the samples were analyzed outside of the technical holding time [7 days from sample collection], qualify detects for all volatile compounds as estimated (J) and non-detects as unusable (R).
c. If the samples were properly preserved, and the samples were analyzed within the technical holding time [14 days from sample collection], no qualification of the data is necessary.
d. If the samples were properly preserved, but were analyzed outside of the technical holding time [14 days from sample collection], qualify detects as estimated (J) and non-detects as unusable (R).
e. If air bubbles were present in the sample vial used for analysis, qualify detected compounds as estimated (J-) and non-detected compounds as estimated (UJ).

Non-aqueous samples

a. If there is no evidence that the samples were properly preserved (T < -7°C or T = 4°C ± 2°C and preserved with $NaHSO_4$), but the samples were analyzed within the technical holding time [14 days

from sample collection], qualify detects for all volatile compounds as estimated (J) and non-detects as (UJ) or unusable (R) using professional judgment.
b. If the samples were properly preserved, and the samples were analyzed within the technical holding time [14 days from sample collection], no qualification of the data is necessary.
c. If there is no evidence that the samples were properly preserved, and the samples were analyzed outside of the technical holding time [14 days from sample collection], qualify detects for all volatile compounds as estimated (J) and non-detects as unusable (R).
d. If the samples were properly preserved, but were analyzed outside of the technical holding time [14 days from sample collection], qualify detects as estimated (J) and non-detects as unusable (R).

Qualify TCLP/SPLP samples

a. If the TCLP/SPLP ZHE procedure is performed within the extraction technical holding time of 14 days, detects and non-detects should not be qualified.
b. If the TCLP/SPLP ZHE procedure is performed outside the extraction technical holding time of 14 days, qualify detects as estimated (J) and non-detects as unusable (R).
c. If TCLP/SPLP aqueous samples and TCLP/SPLP leachate samples are analyzed within the technical holding time of 7 days, detects and non-detects should not be qualified.
d. If TCLP/SPLP aqueous samples and TCLP/SPLP leachate samples are analyzed outside of the technical holding time of 7 days, qualify detects as estimated (J) and non-detects as unusable (R).

Table 1. Holding Time Actions for Low/Medium Volatile Analyses - Summary

Matrix	Preserved	Criteria	Action	
			Detected Associated Compounds	Non-Detected Associated Compounds
Aqueous	No	≤ 7 days	No qualification	
	No	> 7 days	J	R
	Yes	≤ 14 days	No qualification	
	Yes	> 14 days	J	R
Non-Aqueous	No	≤ 14 days	J	Professional judgment, UJ or R
	Yes	≤ 14 days	No qualification	
	Yes/No	> 14 days	J	R
TCLP/SPLP	Yes	≤ 14 days	No qualification	
TCLP/SPLP	No	> 14 days	J	R
TCLP/SPLP	ZHE performed within the 14-day technical holding time		No qualification	
TCLP/SPLP	ZHE performed outside the 14-day technical holding time		J	R
TCLP/SPLP aqueous & TCLP/SPLP leachate	Analyzed within 7 days		No qualification	
TCLP/SPLP aqueous & TCLP/SPLP leachate	Analyzed outside 7 days		J	R
Sample temperature outside 4°C ± 2°C upon receipt at the laboratory			Use professional judgment	
Holding times grossly exceeded			J	R

All criteria were met __X__
Criteria were not met see below ____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

__X___ The BFB performance results were reviewed and found to be within the specified criteria.

__X___ BFB tuning was performed for every 12 hours of sample analysis.

NOTES: All mass spectrometer instrument conditions must be identical to those used during the sample analysis. Background subtraction actions resulting in spectral distortions for the sole purpose of meeting the method specifications are contrary to the Quality Assurance (QA) objectives, and are therefore unacceptable.

NOTES: No data should be qualified based on BFB failure. Instances of this should be noted in the narrative.

All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

Actions:

If samples are analyzed without a preceding valid instrument performance check, qualify all data in those samples as unusable (R).

If ion abundance criteria are not met, professional judgment may be applied to determine to what extent the data may be utilized. When applying professional judgment to this topic, the most important factors to consider are the empirical results that are relatively insensitive to location on the chromatographic profile and the type of instrumentation. Therefore, the critical ion abundance criteria for BFB are the m/z 95/96, 174/572, 174/176, and 176/177 ratios. The relative abundances of m/z 50 and 75 are of lower importance. This issue is more critical for Tentatively Identified Compounds (TICs) than for target analytes.

Note: State in the Data Review Narrative, decisions to use analytical data associated with BFB instrument performance checks not meeting contract requirements.

Note: Verify that that instrument instrument performance check criteria were achieved using techniques described in Low/Medium Volatiles Organic Analysis, Section II.D.5 of the SOM02.2 NFG, obtain additional information on the instrument performance checks. Make sure that background subtraction was performed from the BFB peak and not from background subtracting from the solvent front or from another region of the chromatogram.

Use professional judgment to determine whether associated data should be qualified based on the spectrum of the mass calibration compound.

List the samples affected:

If mass calibration is in error, all associated data are rejected.

All criteria were met __X__
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____12/08/16_____
Dates of continuing (initial) calibration:__12/08/16_____
Dates of continuing calibration:_____12/31/16;_01/03/17;_01/04/17_____
Dates of ending calibration:_____-_____
Instrument ID numbers:_____GCMS4B_____
Matrix/Level:_____Aqueous/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Note: Initial calibration, initial calibration verification, and continuing calibration verification within the method and validation guidance document required performance criteria. Closing calibration check verification not included in data package. No action taken, professional judgment.

Criteria

The analyte calibration criteria in the following Table must be obtained. Analytes not meeting the criteria are qualified.

A separate worksheet should be filled for each initial curve

Initial Calibration - **Table 2. RRF, %RSD, and %D Acceptance Criteria for Initial Calibration and CCV for Low/Medium Volatile Analysis**

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Closing Maximum %D
Dichlorodifluoromethane	0.010	25.0	±40.0	±50.0
Chloromethane	0.010	20.0	±30.0	±50.0
Vinyl chloride	0.010	20.0	±25.0	±50.0
Bromomethane	0.010	40.0	±30.0	±50.0
Chloroethane	0.010	40.0	±25.0	±50.0
Trichlorofluoromethane	0.010	40.0	±30.0	±50.0
1,1-Dichloroethene	0.060	20.0	±20.0	±25.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.050	25.0	±25.0	±50.0
Acetone	0.010	40.0	±40.0	±50.0
Carbon disulfide	0.100	20.0	±25.0	±25.0
Methyl acetate	0.010	40.0	±40.0	±50.0
Methylene chloride	0.010	40.0	±30.0	±50.0
trans-1,2-Dichloroethene	0.100	20.0	±20.0	±25.0
Methyl tert-butyl ether	0.100	40.0	±25.0	±50.0
1,1-Dichloroethane	0.300	20.0	±20.0	±25.0
cis-1,2-Dichloroethene	0.200	20.0	±20.0	±25.0
2-Butanone	0.010	40.0	±40.0	±50.0
Bromochloromethane	0.100	20.0	±20.0	±25.0
Chloroform	0.300	20.0	±20.0	±25.0
1,1,1-Trichloroethane	0.050	20.0	±25.0	±25.0
Cyclohexane	0.010	40.0	±25.0	±50.0
Carbon tetrachloride	0.100	20.0	±25.0	±25.0
Benzene	0.200	20.0	±20.0	±25.0
1,2-Dichloroethane	0.070	20.0	±20.0	±25.0
Trichloroethene	0.200	20.0	±20.0	±25.0
Methylcyclohexane	0.050	40.0	±25.0	±50.0
1,2-Dichloropropane	0.200	20.0	±20.0	±25.0
Bromodichloromethane	0.300	20.0	±20.0	±25.0
cis-1,3-Dichloropropene	0.300	20.0	±20.0	±25.0
4-Methyl-2-pentanone	0.030	25.0	±30.0	±50.0
Toluene	0.300	20.0	±20.0	±25.0
trans-1,3-Dichloropropene	0.200	20.0	±20.0	±25.0
1,1,2-Trichloroethane	0.200	20.0	±20.0	±25.0
Tetrachloroethene	0.100	20.0	±20.0	±25.0
2-Hexanone	0.010	40.0	±40.0	±50.0
Dibromochloromethane	0.200	20.0	±20.0	±25.0
1,2-Dibromoethane	0.200	20.0	±20.0	±25.0
Chlorobenzene	0.400	20.0	±20.0	±25.0
Ethylbenzene	0.400	20.0	±20.0	±25.0

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Closing Maximum
m,p-Xylene	0.200	20.0	±20.0	±25.0
o-Xylene	0.200	20.0	±20.0	±25.0
Styrene	0.200	20.0	±20.0	±25.0
Bromoform	0.100	20.0	±25.0	±50.0
Isopropylbenzene	0.400	20.0	±25.0	±25.0
1,1,2,2-Tetrachloroethane	0.200	20.0	±25.0	±25.0
1,3-Dichlorobenzene	0.500	20.0	±20.0	±25.0
1,4-Dichlorobenzene	0.600	20.0	±20.0	±25.0
1,2-Dichlorobenzene	0.600	20.0	±20.0	±25.0
1,2-Dibromo-3-chloropropane	0.010	25.0	±30.0	±50.0
1,2,4-Trichlorobenzene	0.400	20.0	±30.0	±50.0
1,2,3-Trichlorobenzene	0.400	25.0	±30.0	±50.0
Deuterated Monitoring Compound				
Vinyl chloride-d_3	0.010	20.0	±30.0	±50.0
Chloroethane-d_5	0.010	40.0	±30.0	±50.0
1,1-Dichloroethene-d_2	0.050	20.0	±25.0	±25.0
2-Butanone-d_5	0.010	40.0	±40.0	±50.0
Chloroform-d	0.300	20.0	±20.0	±25.0
1,2-Dichloroethane-d_4	0.060	20.0	±25.0	±25.0
Benzene-d_6	0.300	20.0	±20.0	±25.0
1,2-Dichloropropane-d_6	0.200	20.0	±20.0	±25.0
Toluene-d_8	0.300	20.0	±20.0	±25.0
trans-1,3-Dichloropropene-d_4	0.200	20.0	±20.0	±25.0
2-Hexanone-d_5	0.010	40.0	±40.0	±50.0
1,1,2,2-Tetrachloroethane-d_2	0.200	20.0	±25.0	±25.0
1,2-Dichlorobenzene-d_4	0.400	20.0	±20.0	±25.0

[1] If a closing CCV is acting as an opening CCV, all target analytes and DMCs must meet the requirements for an opening CCV.

Actions:

1. If any volatile target compound has an RRF value less than the minimum in the table, use professional judgment for detects, based on mass spectral identification, to qualify the data as estimated (J+ or R).
   a. If any volatile target compound has an RRF value less than the minimum criterion, qualify non-detected compounds as unusable (R).
   b. If any of the volatile target compounds listed in the Table has %RSD greater than the criteria, qualify detects as estimated (J), and non-detected compounds using professional judgment.
   c. If the volatile target compounds meet the acceptance criteria for RRF and the %RSD, no qualification of the data is necessary.

d. No qualification of the data is necessary on the DMC RRF and %RSD data alone. Use professional judgment and follow the guidelines in Action 2 to evaluate the DMC RRF and %RSD data in conjunction with the DMC recoveries to determine the need for qualification of data.

2. At the reviewer's discretion, and based on the project-specific Data Quality Objectives (DQOs), a more in-depth review may be considered using the following guidelines:
   a. If any volatile target compound has a %RSD greater than the maximum criterion in the Table, and if eliminating either the high or the low-point of the curve does not restore the %RSD to less than or equal to the required maximum:
      i. Qualify detects for that compound(s) as estimated (J).
      ii. Qualify non-detected volatile target compounds using professional judgment.
   b. If the high-point of the curve is outside of the linearity criteria (e.g., due to saturation):
      i. Qualify detects outside of the linear portion of the curve as estimated (J).
      ii. No qualifiers are required for detects in the linear portion of the curve.
      iii. No qualifiers are required for volatile target compounds that were not detected.
   c. If the low-point of the curve is outside of the linearity criteria:
      i. Qualify low-level detects in the area of non-linearity as estimated (J).
      ii. No qualifiers are required for detects in the linear portion of the curve.
      iii. For non-detected volatile compounds, use the lowest point of the linear portion of the curve to determine the new quantitation limit.

Note: If the laboratory has failed to provide adequate calibration information, inform the Region's designated representative to contact the laboratory and request the necessary information. If the information is not available, the reviewer must use professional judgment to assess the data.

State in the Data Review Narrative, if possible, the potential effects on the data due to calibration criteria exceedance.

Note, for the Laboratory COR action, if calibration criteria are grossly exceeded.

Table. Initial Calibration Actions for Low/Medium Volatile Analysis – Summary

Criteria	Action	
	Detect	Non-detect
Initial Calibration not performed at specified frequency and sequence	Use professional judgment R	Use professional judgment R
Initial Calibration not performed at the specified concentrations	J	UJ
RRF < Minimum RRF in Table for target analyte	Use professional judgment J+ or R	R
RRF > Minimum RRF in Table for target analyte	No qualification	No qualification
%RSD > Maximum %RSD in Table for target analyte	J	Use professional judgment
%RSD ≤ Maximum %RSD in Table for target analyte	No qualification	No qualification

All criteria were met __X___
Criteria were not met
and/or see below _____

Continuing Calibration Verification (CCV)

NOTE: Verify that the CCV was run at the required frequency (an opening and closing CCV must be run within 12-hour period) and the CCV was compared to the correct initial calibration. If the mid-point standard from the initial calibration is used as an opening CCV, verify that the result (RRF) of the mid-point standard was compared to the average RRF from the correct initial calibration.

The closing CCV used to bracket the end of a 12-hour analytical sequence may be used as the opening CCV for the new 12-hour analytical sequence, provided that all the technical acceptance criteria are met for an opening CCV (see criteria show before in the Table) . If the closing CCV does not meet the technical acceptance criteria for an opening CCV, then a BFB tune followed by an opening CCV is required and the next 12-hour time period begins with the BFB tune.

All DMCs must meet RRF criteria. No qualification of the data is necessary on the DMCs RRF and %RSD/%D data alone. However, use professional judgment to evaluate the DMC and %RSD/%D data in conjunction with the DMC recoveries to determine the need of qualification the data.

Action:

1. If a CCV (opening and closing) was not run at the appropriate frequency, qualify data using professional judgment.

2. Qualify all volatile target compounds in Table shown before using the following criteria:

   a. For an opening CCV, if any volatile target compound has an RRF value less than the minimum criterion, use professional judgment for detects, based on mass spectral identification, to qualify the data as estimated (J) and qualify non-detected compounds as unusable (R).
   b. For a closing CCV, if any volatile target compound has an RRF value less than the criteria, use professional judgment for detects based on mass spectral identification to qualify the data as estimated (J), and qualify non-detected compounds as unusable (R).
   c. For an opening CCV, if the Percent Difference value for any of the volatile target compounds is outside the limits in calibration criteria Table shown before, qualify detects as estimated (J) and non-detected compounds as estimated (UJ).
   d. For a closing CCV, if the Percent Difference value for any volatile target compound is outside the limits in calibration criteria table, qualify detects as estimated (J) and non-detected compounds as estimated (UJ).
   e. If the volatile target compounds meet the acceptable criteria for RRF and the Percent Difference, no qualification of the data is necessary.

f. No qualification of the data is necessary on the DMC RRF and the Percent Difference data alone. Use professional judgment to evaluate the DMC RRF and Percent Difference data in conjunction with the DMC recoveries to determine the need for qualification of data.

Notes: If the laboratory has failed to provide adequate calibration information, inform the Region's designated representative to contact the laboratory and request the necessary information. If the information is not available, the reviewer must use professional judgment to assess the data.

State in the Data Review Narrative, if possible, the potential effects on the data due to calibration criteria exceedance.

Note, for Contract Laboratory COR action, if calibration criteria are grossly exceeded.

Table. Continuing Calibration Actions for Low/Medium Volatile Analysis – Summary

Criteria for Opening CCV	Criteria for Closing CCV	Action	
		Detect	Non-detect
CCV not performed at required frequency	CCV not performed at required frequency	Use professional judgment R	Use professional judgment R
CCV not performed at specified concentration	CCV not performed at specified concentration	Use professional judgment	Use professional judgment
RRF < Minimum RRF in Table 2 for target analyte	RRF < Minimum RRF in Table for target analyte	Use professional judgment J or R	R
RRF ≥ Minimum RRF in Table 2 for target analyte	RRF ≥ Minimum RRF in Table for target analyte	No qualification	No qualification
%D outside the Opening Maximum %D limits in Table 2 for target analyte	%D outside the Closing Maximum %D limits in Table for target analyte	J	UJ
%D within the inclusive Opening Maximum %D limits in Table 2 for target analyte	%D within the inclusive Closing Maximum %D limits in Table for target analyte	No qualification	No qualification

All criteria were met ___X___
Criteria were not met
and/or see below _____

BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

The concentration of a target analyte in any blank must not exceed its Contract Required Quantitation Limit (CRQL) (2x CRQLs for Methylene chloride, Acetone, and 2-Butanone). TIC concentration in any blanks must be ≤ 5.0 µg/L for water (0.0050 mg/L for TCLP leachate) and ≤ 5.0 µg/kg for soil matrices.

Laboratory blanks

The method blank, like any other sample in the SDG, must meet the technical acceptance criteria for sample analysis.

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No target analyte detected in method blanks.				

Field/Equipment/Trip blank

If field or trip blanks are present, the data reviewer should evaluate this data in a similar fashion as the method blanks.

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No target analytes detected in the field/trip/equipment blanks associated with this data package.				

All criteria were met __X___
Criteria were not met
and/or see below _____

BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Note: All fields blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks and trip blanks must be qualified for system monitoring compounds, instrument performance criteria, and spectral or calibration QC problems.

Samples taken from a drinking water tap do not have associated field blanks.

When applied as described in the Table below, the contaminant concentration in the blank is multiplied by the sample dilution factor.

Table. Blank and TCLP/SPLP LEB Actions for Low/Medium Volatile Analysis

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Storage, Field, Trip, TCLP/SPLP LEB, Instrument**	Detects	Not detected	No qualification required
	< CRQL *	< CRQL*	Report CRQL value with a U
		≥ CRQL*	No qualification required
	> CRQL *	< CRQL*	Report CRQL value with a U
		≥ CRQL* and ≤ blank concentration	Report blank value for sample concentration with a U
		≥ CRQL* and > blank concentration	No qualification required
	= CRQL*	≤ CRQL*	Report CRQL value with a U
		> CRQL*	No qualification required
	Gross contamination	Detects	Report blank value for sample concentration with a U

* 2x the CRQL for methylene chloride, 2-butanone and acetone.
** Qualifications based on instrument blank results affect only the sample analyzed immediately after the sample that has target compounds that exceed the calibration range or non-target compounds that exceed 100 µg/L.

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

Notes:

High and low level blanks must be treated separately
Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met __X__
Criteria were not met
and/or see below _____

DEUTERATED MONITORING COMPOUNDS (DMCs)

Laboratory performance of individual samples is established by evaluation of surrogate spike (DMCs) recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

Table. Volatile Deuterated Monitoring Compounds (DMCs) and Recovery Limits

DMC	%R for Water Sample	%R for Soil Sample
Vinyl chloride-d3	60-135	30-150
Chloroethane-d5	70-130	30-150
1,1-Dichloroethene-d2	60-125	45-110
2-Butanone-d5	40-130	20-135
Chloroform-d	70-125	40-150
1,2-Dichloroethane-d4	70-125	70-130
Benzene-d6	70-125	20-135
1,2-Dichloropropane-d6	70-120	70-120
Toluene-d8	80-120	30-130
trans-1,3-Dichloropropene-d4	60-125	30-135
2-Hexanone-d5	45-130	20-135
1,1,2,2-Tetrachloroethane-d2	65-120	45-120
1,2-Dichlorobenzene-d4	80-120	75-120

NOTE: The recovery limits for any of the compounds listed in the above Table may be expanded at any time during the period of performance if the United States Environmental Protection Agency (EPA) determines that the limits are too restrictive.

Action:

Are recoveries for DMCs in volatile samples and blanks must be within the limits specified in the Table above. Yes? or No?

NOTE: The recovery limits for any of the compounds listed in the Table above may be expanded at any time during the period of performance if USEPA determines that the limits are too restrictive.

List the DMCs that may fail to meet the recovery limits

Sample ID	Date	DMCs	% Recovery	Action

Note: DMCs recoveries within the required limits and within the guidance document performance criteria (80 – 120). Other non-deuterated surrogates added to the samples, % recoveries within laboratory control limits.

Note: Any sample which has more than 3 DMCs outside the limits must be reanalyzed.

Action:

1. For any recovery greater than the upper acceptance limit:
   a. Qualify detected associated volatile target compounds as estimated high (J+).
   b. Do not qualify non-detected associated volatile target compounds.
2. For any recovery greater than or equal to 10%, and less than the lower acceptance limit:
   a. Qualify detected associated volatile target compounds as estimated low (J-).
   b. Qualify non-detected associated volatile target compounds as estimated (UJ).
3. For any recovery less than 10%:
   a. Qualify detected associated volatile target compounds as estimated low (J-).
   b. Qualify non-detected associated volatile target compounds as unusable (R).
4. For any recovery within acceptance limits, no qualification of the data is necessary.
5. In the special case of a blank analysis having DMCs out of specification, the reviewer must give special consideration to the validity of associated sample data. The basic concern is whether the blank problems represent an isolated problem with the blank alone, or whether there is a fundamental problem with the analytical process. For example, if one or more samples in the batch show acceptable DMC recoveries, the reviewer may choose to consider the blank problem to be an isolated occurrence. However, even if this judgment allows some use of the affected data, note analytical problems for Contract Laboratory COR action.
6. If more than three DMCs are outside of the recovery limits for Low/Medium volatiles analysis and the sample was not reanalyzed, note under Contract Problems/Non-Compliance.

Table. Deuterated Monitoring Compound (DMC) Recovery Actions for Low/Medium Volatiles Analyses – Summary

Criteria	Action	
	Detect Associated Compounds	Non-detected Associated Compounds
%R < 10%	J-	R
10% ≤ %R < Lower Acceptance Limit	J-	UJ
Lower Acceptance Limit ≤ %R ≤ Upper Acceptance Limit	No qualification	No qualification
%R > Upper Acceptance Limit	J+	No qualification

TABLE. VOLATILE DEUTERATED MONITORING COMPOUNDS (DMCs) AND THE ASSOCIATED TARGET COMPOUNDS

Vinyl chloride-d_3 (DMC-1)	**Chloroethane-d_5 (DMC-2)**	**1,1-Dichloroethene-d_2 (DMC-3)**
Vinyl chloride	Dichlorodifluoromethane Chloromethane Bromomethane Chloroethane Carbon disulfide	trans-1,2-Dichloroethene cis-1,2-Dichloroethene 1,1-Dichloroethene
2-Butanone-d_5 (DMC-4)	**Chloroform-d (DMC-5)**	**1,2-Dichloroethane-d_4 (DMC-6)**
Acetone 2-Butanone	1,1-Dichloroethane Bromochloromethane Chloroform Dibromochloromethane Bromoform	Trichlorofluoromethane 1,1,2-Trichloro-1,2,2-trifluoroethane Methyl acetate Methylene chloride Methyl-tert-butyl ether 1,1,1-Trichloroethane Carbon tetrachloride 1,2-Dibromoethane 1,2-Dichloroethane
Benzene-d_6 (DMC-7)	**1,2-Dichloropropane-d_6 (DMC-8)**	**Toluene-d_8 (DMC-9)**
Benzene	Cyclohexane Methylcyclohexane 1,2-Dichloropropane Bromodichloromethane	Trichloroethene Toluene Tetrachloroethene Ethylbenzene o-Xylene m,p-Xylene Styrene Isopropylbenzene
trans-1,3-Dichloropropene-d_4 (DMC-10)	**2-Hexanone-d_5 (DMC-11)**	**1,1,2,2-Tetrachloroethane-d_2 (DMC-12)**
cis-1,3-Dichloropropene trans-1,3-Dichloropropene 1,1,2-Trichloroethane	4-Methyl-2-pentanone 2-Hexanone	1,1,2,2,-Tetrachloroethane 1,2-Dibromo-3-chloropropane
1,2-Dichlorobenzene-d_4 (DMC-13)		
Chlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene 1,2,3-Trichlorobenzene		

All criteria were met ___X____
Criteria were not met
and/or see below _____

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

NOTES: Data for MS and MSDs will not be present unless requested by the Region. Notify the Contract Laboratory COR if a field or trip blank was used for the MS and MSD.

For a Matrix Spike that does not meet criteria, apply the action to only the field sample used to prepare the Matrix Spike sample. If it is clearly stated in the data validation materials that the samples were taken through incremental sampling or some other method guaranteeing the homogeneity of the sample group, then the entire sample group may be qualified.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:_ JC34340-1MS/-1MSD____ Matrix/Level:_____Groundwater_____
Sample ID:_ JC34340-16MS/-16MSD__ Matrix/Level:_____Groundwater_____
Sample ID:_ JC34180-5MS/-5MSD____ Matrix/Level:_____Groundwater_____

Note: MS/MSD % recoveries and RPD within laboratory control limits.

Note:

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

1. No qualification of the data is necessary on MS and MSD data alone. However, using professional judgment, the validator may use the MS and MSD results in conjunction with other QC criteria and determine the need for some qualification of the data.

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).
If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).
If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met __X___
Criteria were not met
and/or see below _____

LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? **Yes** or No. If no make note in data review memo.
List the %R of compounds which do not meet the criteria

LCS ID COMPOUND % R QC LIMIT

Recoveries(blank_spike)_within_laboratory_control_limits._____
_____
_____
_____
_____
_____
_____

Note:

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).
If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met ___X___
Criteria were not met
and/or see below _____

IX. FIELD/LABORATORY DUPLICATE PRECISION

Sample IDs: _JC34340-2/-2DUP_____ Matrix:__Groundwater___
Sample IDs: _JC34340-7/JC34340-8_____ Matrix:__Groundwater___

Field/laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

> **NOTE:** In the absence of QAPP guidance for validating data from field duplicates, the following action will be taken.

Identify which samples within the data package are field duplicates. Estimate the relative percent difference (RPD) between the values for each compound. Use professional judgment to note large RPDs (> 50%) in the narrative.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Field/laboratory duplicate analyzed with this data package. PRD within required criteria, ≤ 50 % for target analytes detected at concentration > 5x the SQL.					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions are suggested based on professional judgment:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met ___X___
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION

Internal standard area counts within the required criteria for all samples.

Action:

1. If an internal standard area count for a sample or blank is greater than 200.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration) (see Table below):
   a. Qualify detects for compounds quantitated using that internal standard as estimated low (J-).
   b. Do not qualify non-detected associated compounds.
2. If an internal standard area count for a sample or blank is less than 20.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration):
   a. Qualify detects for compounds quantitated using that internal standard as estimated high (J+).
   b. Qualify non-detected associated compounds as unusable (R).
3. If an internal standard area count for a sample or blank is greater than or equal to 20.0%, and less than or equal to 200% of the area for the associated standard opening CCV or mid-point standard from initial calibration, no qualification of the data is necessary.
4. If an internal standard RT varies by more than 30.0 seconds: Examine the chromatographic profile for that sample to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Detects should not need to be qualified as unusable (R) if the mass spectral criteria are met.
5. If an internal standard RT varies by less than or equal to 30.0 seconds, no qualification of the data is necessary.

Note: Inform the Contract Laboratory Program Project Officer (CLP PO) if the internal standard performance criteria are grossly exceeded. Note in the Data Review Narrative potential effects on the data resulting from unacceptable internal standard performance.

6. If required internal standard compounds are not added to a sample or blank, qualify detects and non-detects as unusable (R).
7. If the required internal standard compound is not analyzed at the specified concentration in a sample or blank, use professional judgment to qualify detects and non-detects.

Table. Internal Standard Actions for Low/Medium Volatiles Analyses - Summary

Criteria	Action	
	Detected Associated Compounds*	Non-detected Associated Compounds*
Area counts > 200% of 12-hour standard (opening CCV or mid-point standard from initial calibration)	J-	No qualification
Area counts < 20% of 12-hour standard (opening CCV or mid-point standard from initial calibration)	J+	R
Area counts ≥ 50% but ≤ 200% of 12-hour standard (opening CCV or mid-point standard from initial calibration)	No qualification	
RT difference > 30.0 seconds between samples and 12-hour standard (opening CCV or mid-point standard from initial calibration)	R **	R
RT difference ≤ 30.0 seconds between samples and 12-hour standard (opening CCV or mid-point standard from initial calibration)	No qualification	

* For volatile compounds associated to each internal standard, see TABLE - VOLATILE TARGET ANALYTES, DEUTERATED MONITORING COMPOUNDS WITH ASSOCIATED INTERNAL STANDARDS FOR QUANTITATION in SOM02.2, Exhibit D, available at: http://www.epa.gov/superfund/programs/clp/download/som/som22d.pdf
** Detects should not need to be qualified as unusable (R) if the mass spectral criteria are met.

All criteria were met __X__
Criteria were not met
and/or see below _____

TARGET COMPOUND IDENTIFICATION

Criteria:

Is the Relative Retention Times (RRTs) of reported compounds within ±0.06 RRT units of the standard RRT [opening Continuing Calibration Verification (CCV) or mid-point standard from the initial calibration]. Yes? or No?

List compounds not meeting the criteria described above:

Sample ID	Compounds	Actions

Mass spectra of the sample compound and a current laboratory-generated standard [i.e., the mass spectrum from the associated calibration standard (opening CCV or mid-point standard from initial calibration)] must match according to the following criteria:

a. All ions present in the standard mass spectrum at a relative intensity greater than 10% must be present in the sample spectrum.
b. The relative intensities of these ions must agree within ±20% between the standard and sample spectra (e.g., for an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30-70%).
c. Ions present at greater than 10% in the sample mass spectrum, but not present in the standard spectrum, must be evaluated by a reviewer experienced in mass spectral interpretation.

List compounds not meeting the criteria described above:

Sample ID	Compounds	Actions

Action:

1. The application of qualitative criteria for GC/MS analysis of target compounds requires professional judgment. It is up to the reviewer's discretion to obtain additional information from the laboratory. If it is determined that incorrect identifications were made, qualify all such data as unusable (R).

2. Use professional judgment to qualify the data if it is determined that cross-contamination has occurred.

3. Note in the Data Review Narrative any changes made to the reported compounds or concerns regarding target compound identifications. Note, for Contract Laboratory COR action, the necessity for numerous or significant changes.

TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

NOTE: Tentatively identified compounds should only be evaluated when requested by a party from outside of the Hazardous Waste Support Section (HWSS).

List TICs

Sample ID	Compound	Sample ID	Compound

Action:

1. Qualify all TIC results for which there is presumptive evidence of a match (e.g. greater than or equal to 85% match) as tentatively identified (NJ), with approximated concentrations. TICs labeled "unknown" are qualified as estimated (J).
2. General actions related to the review of TIC results are as follows:
   a. If it is determined that a tentative identification of a non-target compound is unacceptable, change the tentative identification to "unknown" or another appropriate identification, and qualify the result as estimated (J).
   b. If all contractually-required peaks were not library searched and quantitated, the Region's designated representative may request these data from the laboratory.
3. In deciding whether a library search result for a TIC represents a reasonable identification, use professional judgment. If there is more than one possible match, report the result as "either compound X or compound Y". If there is a lack of isomer specificity, change the TIC result to a nonspecific isomer result (e.g., 1,3,5-trimethyl benzene to trimethyl benzene

isomer) or to a compound class (e.g., 2-methyl, 3-ethyl benzene to a substituted aromatic compound).

4. The reviewer may elect to report all similar compounds as a total (e.g., all alkanes may be summarized and reported as total hydrocarbons).
5. Target compounds from other fractions and suspected laboratory contaminants should be marked as "non-reportable".
6. Other Case factors may influence TIC judgments. If a sample TIC match is poor, but other samples have a TIC with a valid library match, similar RRT, and the same ions, infer identification information from the other sample TIC results.
7. Note in the Data Review Narrative any changes made to the reported data or any concerns regarding TIC identifications.
8. Note, for Contract Laboratory COR action, failure to properly evaluate and report TICs

All criteria were met __X__
Criteria were not met
and/or see below _____

SAMPLE QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

Action:

1. If any discrepancies are found, the Region's designated representative may contact the laboratory to obtain additional information that could resolve any differences. If a discrepancy remains unresolved, the reviewer must use professional judgment to decide which value is the most accurate. Under these circumstances, the reviewer may determine that qualification of data is warranted. Note in the Data Review Narrative a description of the reasons for data qualification and the qualification that is applied to the data.
2. For non-aqueous samples, in the percent moisture is less than 70.0%, no qualification of the data is necessary. If the percent moisture is greater than or equal to 70.0% and less than 90.0%, qualify detects as estimated (J) and non-detects as approximated (UJ). If the percent moisture is greater than or equal to 90.0%, qualify detects as estimated (J) and non-detects as unusable (R) (see Table below).
3. Note, for Contract Laboratory COR action, numerous or significant failures to accurately quantify the target compounds or to properly evaluate and adjust CRQLs.
4. Results between MDL and CRQL should be qualified as estimated "J".
5. Results < MDL should be reported at the CRQL and qualified "U". MDLs themselves are not reported.

Table. Percent Moisture Actions for Low/Medium Volatiles Analysis for Non-Aqueous Samples

Criteria	Action	
	Detected Associated Compounds	**Non-detected Associated Compounds**
% Moisture < 70.0	No qualification	
70.0 < % Moisture < 90.0	J	UJ
% Moisture > 90.0	J	R

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

Sample ID

JC34340-1 MS 1,3-butadiene RF = 0.619

[ ] = (135288)(50)/(0.619)(225639) = 48.4 ppb Ok

All criteria were met __X__
Criteria were not met
and/or see below _____

B. Percent Solids

List samples which have ≥ 70 % solids

_____
_____
_____
_____
_____
_____

QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

All criteria were met __X__
Criteria were not met
and/or see below ____

OTHER ISSUES

A. System Performance

List samples qualified based on the degradation of system performance during simple analysis:

Sample ID	Comments	Actions
_____	_____	_____
_No_degradation_of_system_performance_observed.		_____
_____	_____	_____
_____	_____	_____

Action:

Use professional judgment to qualify the data if it is determined that system performance has degraded during sample analyses. Inform the Contract Laboratory Program COR any action as a result of degradation of system performance which significantly affected the data.

B. Overall Assessment of Data

List samples qualified based on other issues:

Sample ID	Comments	Actions
_____	_____	_____
_No_additional_issues_observed_that_require_qualification_of_the_data._Results_are_valid_and__ _can_be_used_for_decission_purposes._____		_____
_____	_____	_____
_____	_____	_____

Action:

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
2. Write a brief narrative to give the user an indication of the analytical limitations of the data. Inform the Contract Laboratory COR the action, any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).

EXECUTIVE NARRATIVE

SDG No:	JC34340	Laboratory:	Accutest, New Jersey
Analysis:	SW846-8270D	Number of Samples:	14
Location:	BMSMC, Building 5 Area Humacao, PR		

SUMMARY: Fourteen (14) samples were analyzed for selected SVOCs following method SW846-8270D and Selected PAHs and 1,4-Dioxane were also analyzed by SW846-8270D using the selective ion monitoring (SIM) technique. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: EPA Hazardous Waste Support Section, SOP HW-35A, July 2015 – Revision 0. Semivolatile Data Validation. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues: **None**
Major: **None**
Minor: **None**

Critical findings: **None**
Major findings: **None**
Minor findings:

1. All samples extracted and analyzed within method recommended holding time except for the cases described in the Data Review Worksheet. Sample preservation was appropriate.

No action taken, professional judgment. Samples were re-extracted outside holding time for confirmation.

2. Initial and continuing calibration verifications meet the method and guidance document required performance criteria except in the cases described in the Data Review Worksheet. Results for were qualified as estimated (J or UJ) in affected samples.

No closing calibration verification included in data package. No action taken, professional judgment.

QC samples were not validated.

3. Sample JC34340-16MS/-MSD have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank. No action taken.

1,4-dioxane found in method blank. No action taken. 1,4-dioxane not detected in sample JC34340-15 and reported from the scan mode run in sample JC34340-16.

4. Surrogate standards recovered within laboratory control limits except for the cases described in the Data Review Worksheet. No action taken.

Surrogates not recovered in samples JC34340-16 due to dilution. No action taken.

5. MS/MSD % recovery and RPD within laboratory control limits except for the cases described in the Data Review Worksheet.

No qualification made based on RPD results, professional judgment.

No action taken for analytes not meeting the MS/MSD % recovery control limit; outside control limits due to high level in sample relative to spike amount.

MS/MSD % recovery results apply only to the unspiked sample; No qualification made on unspiked samples from another jobs.

6. Field duplicate analyzed as part of this data package. RPD within the required guidance document criteria < 50 % for detected target analytes above 5 SQL except for the cases described in the Data Review Worksheet. Results for 1,4-dioxane qualified as estimated (J) in sample and duplicate.

7. The acid surrogate standard not added to the LCS analyzed on 12/28/16. The affected samples either was not re-extracted because no sample was left or extracted outside the method recommended holding time. No action taken, professional judgment.

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888

Signature: 

Date: January 28, 2017

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC34340-1
Sample location: BMSMC Building 5 Area
Sampling date: 12/20/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.1	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.1	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.0	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.1	ug/l	1	-	U	Yes
2,4-Dinitrophenol	10	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.1	ug/l	1	-	U	Yes
2-Methylphenol	2.0	ug/l	1	-	U	Yes
3&4-Methylphenol	2.0	ug/l	1	-	U	Yes
2-Nitrophenol	5.1	ug/l	1	-	U	Yes
4-Nitrophenol	10	ug/l	1	-	U	Yes
Pentachlorophenol	4.1	ug/l	1	-	U	Yes
Phenol	2.0	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.1	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.1	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.1	ug/l	1	-	U	Yes
Acenaphthene	1.0	ug/l	1	-	U	Yes
Acenaphthylene	1.0	ug/l	1	-	U	Yes
Acetophenone	2.0	ug/l	1	-	U	Yes
Anthracene	1.0	ug/l	1	-	U	Yes
Atrazine	2.0	ug/l	1	-	U	Yes
Benzaldehyde	5.1	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.0	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.0	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.0	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.0	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.0	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.0	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.0	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.0	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.0	ug/l	1	-	U	Yes
4-Chloroaniline	5.1	ug/l	1	-	U	Yes
Carbazole	1.0	ug/l	1	-	U	Yes
Caprolactam	2.0	ug/l	1	-	U	Yes
Chrysene	1.0	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.0	ug/l	1	-	U	Yes

bis(2-Chloroethyl)ether	2.0	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.0	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.0	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.0	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.0	ug/l	1	-	U	Yes
Dibenzofuran	5.1	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.0	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.0	ug/l	1	-	U	Yes
Diethyl phthalate	2.0	ug/l	1	-	U	Yes
Dimethyl phthalate	2.0	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.0	ug/l	1	-	U	Yes
Fluoranthene	1.0	ug/l	1	-	U	Yes
Fluorene	1.0	ug/l	1	-	U	Yes
Hexachlorobenzene	1.0	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.0	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	10	ug/l	1	-	U	Yes
Hexachloroethane	2.0	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.0	ug/l	1	-	U	Yes
Isophorone	2.0	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Nitroaniline	5.1	ug/l	1	-	U	Yes
3-Nitroaniline	5.1	ug/l	1	-	U	Yes
4-Nitroaniline	5.1	ug/l	1	-	U	Yes
Nitrobenzene	2.0	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.0	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.1	ug/l	1	-	U	Yes
Phenanthrene	1.0	ug/l	1	-	U	Yes
Pyrene	1.0	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.0	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.051	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.051	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.10	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.10	ug/l	1	-	U	Yes
Chrysene	0.10	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.10	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.10	ug/l	1	-	U	Yes
Naphthalene	0.10	ug/l	1	-	U	Yes
1,4-Dioxane	2.71	ug/l	1	-	-	Yes

Sample ID: JC34340-2
Sample location: BMSMC Building 5 Area
Sampling date: 12/20/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.1	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.1	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.0	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.1	ug/l	1	-	U	Yes
2,4-Dinitrophenol	10	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.1	ug/l	1	-	U	Yes
2-Methylphenol	2.0	ug/l	1	-	U	Yes
3&4-Methylphenol	2.0	ug/l	1	-	U	Yes
2-Nitrophenol	5.1	ug/l	1	-	U	Yes
4-Nitrophenol	10	ug/l	1	-	U	Yes
Pentachlorophenol	4.0	ug/l	1	-	U	Yes
Phenol	2.0	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.1	ug/l	1	-	UJ	Yes ✓
2,4,5-Trichlorophenol	5.1	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.1	ug/l	1	-	U	Yes
Acenaphthene	1.0	ug/l	1	-	U	Yes
Acenaphthylene	1.0	ug/l	1	-	U	Yes
Acetophenone	2.0	ug/l	1	-	U	Yes
Anthracene	1.0	ug/l	1	-	U	Yes
Atrazine	2.0	ug/l	1	-	U	Yes
Benzaldehyde	5.1	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.0	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.0	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.0	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.0	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.0	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.0	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.0	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.0	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.0	ug/l	1	-	U	Yes
4-Chloroaniline	5.1	ug/l	1	-	U	Yes
Carbazole	1.0	ug/l	1	-	U	Yes
Caprolactam	2.0	ug/l	1	-	U	Yes
Chrysene	1.0	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.0	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.0	ug/l	1	-	U	Yes

bis(2-Chloroisopropyl)ether	2.0	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.0	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.0	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.0	ug/l	1	-	U	Yes
Dibenzofuran	5.1	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.0	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.0	ug/l	1	-	U	Yes
Diethyl phthalate	2.0	ug/l	1	-	U	Yes
Dimethyl phthalate	2.0	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.0	ug/l	1	-	U	Yes
Fluoranthene	1.0	ug/l	1	-	U	Yes
Fluorene	1.0	ug/l	1	-	U	Yes
Hexachlorobenzene	1.0	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.0	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	10	ug/l	1	-	UJ	Yes ✓
Hexachloroethane	2.0	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.0	ug/l	1	-	U	Yes
Isophorone	2.0	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Nitroaniline	5.1	ug/l	1	-	U	Yes
3-Nitroaniline	5.1	ug/l	1	-	U	Yes
4-Nitroaniline	5.1	ug/l	1	-	U	Yes
Nitrobenzene	2.0	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.0	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.1	ug/l	1	-	U	Yes
Phenanthrene	1.0	ug/l	1	-	U	Yes
Pyrene	1.0	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.0	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.051	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.051	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.10	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.10	ug/l	1	-	U	Yes
Chrysene	0.10	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.10	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.10	ug/l	1	-	U	Yes
Naphthalene	0.10	ug/l	1	-	U	Yes
1,4-Dioxane	0.10	ug/l	1	-	U	Yes

Sample ID: JC34340-3
Sample location: BMSMC Building 5 Area
Sampling date: 12/20/2016
Matrix: AQ - Field Blank Water

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.5	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.5	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.5	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.5	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.5	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.4	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.5	ug/l	1	-	UJ	Yes
2,4,5-Trichlorophenol	5.5	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.5	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.0	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.5	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	5.5	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	UJ	Yes

bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.5	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	UJ	Yes
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.5	ug/l	1	-	U	Yes
3-Nitroaniline	5.5	ug/l	1	-	U	Yes
4-Nitroaniline	5.5	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.5	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.055	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.055	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.11	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.11	ug/l	1	-	U	Yes
Chrysene	0.11	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.11	ug/l	1	-	U	Yes
Naphthalene	0.11	ug/l	1	-	U	Yes
1,4-Dioxane	0.11	ug/l	1	-	U	Yes

Sample ID: JC34340-4
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: AQ - Equipment Blank

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.2	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.2	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.1	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.2	ug/l	1	-	U	Yes
2,4-Dinitrophenol	10	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.2	ug/l	1	-	U	Yes
2-Methylphenol	2.1	ug/l	1	-	U	Yes
3&4-Methylphenol	2.1	ug/l	1	-	U	Yes
2-Nitrophenol	5.2	ug/l	1	-	U	Yes
4-Nitrophenol	10	ug/l	1	-	U	Yes
Pentachlorophenol	4.2	ug/l	1	-	U	Yes
Phenol	2.1	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.2	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.2	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.2	ug/l	1	-	U	Yes
Acenaphthene	1.0	ug/l	1	-	U	Yes
Acenaphthylene	1.0	ug/l	1	-	U	Yes
Acetophenone	2.1	ug/l	1	-	U	Yes
Anthracene	1.0	ug/l	1	-	U	Yes
Atrazine	2.1	ug/l	1	-	U	Yes
Benzaldehyde	5.2	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.0	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.0	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.0	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.0	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.0	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.0	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.1	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.0	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.1	ug/l	1	-	U	Yes
4-Chloroaniline	5.2	ug/l	1	-	U	Yes
Carbazole	1.0	ug/l	1	-	U	Yes
Caprolactam	2.1	ug/l	1	-	U	Yes
Chrysene	1.0	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.1	ug/l	1	-	U	Yes

bis(2-Chloroethyl)ether	2.1	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.1	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.1	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.1	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.0	ug/l	1	-	U	Yes
Dibenzofuran	5.2	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.1	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.1	ug/l	1	-	U	Yes
Diethyl phthalate	2.1	ug/l	1	-	U	Yes
Dimethyl phthalate	2.1	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.1	ug/l	1	-	U	Yes
Fluoranthene	1.0	ug/l	1	-	U	Yes
Fluorene	1.0	ug/l	1	-	U	Yes
Hexachlorobenzene	1.0	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.0	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	10	ug/l	1	-	U	Yes
Hexachloroethane	2.1	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.0	ug/l	1	-	U	Yes
Isophorone	2.1	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Nitroaniline	5.2	ug/l	1	-	U	Yes
3-Nitroaniline	5.2	ug/l	1	-	U	Yes
4-Nitroaniline	5.2	ug/l	1	-	U	Yes
Nitrobenzene	2.1	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.1	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.2	ug/l	1	-	U	Yes
Phenanthrene	1.0	ug/l	1	-	U	Yes
Pyrene	1.0	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.1	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.052	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.052	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.10	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.10	ug/l	1	-	U	Yes
Chrysene	0.10	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.10	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.10	ug/l	1	-	U	Yes
Naphthalene	0.10	ug/l	1	-	U	Yes
1,4-Dioxane	0.10	ug/l	1	-	U	Yes

Sample ID: JC34340-7
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.0	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.0	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.0	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.0	ug/l	1	-	U	Yes
2,4-Dinitrophenol	10	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.0	ug/l	1	-	U	Yes
2-Methylphenol	2.0	ug/l	1	-	U	Yes
3&4-Methylphenol	2.0	ug/l	1	-	U	Yes
2-Nitrophenol	5.0	ug/l	1	-	U	Yes
4-Nitrophenol	10	ug/l	1	-	U	Yes
Pentachlorophenol	4.0	ug/l	1	-	UJ	Yes
Phenol	2.0	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.0	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.0	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.0	ug/l	1	-	U	Yes
Acenaphthene	1.0	ug/l	1	-	U	Yes
Acenaphthylene	1.0	ug/l	1	-	U	Yes
Acetophenone	2.0	ug/l	1	-	U	Yes
Anthracene	1.0	ug/l	1	-	U	Yes
Atrazine	2.0	ug/l	1	-	U	Yes
Benzaldehyde	5.0	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.0	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.0	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.0	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.0	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.0	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.0	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.0	ug/l	1	-	UJ	Yes
1,1'-Biphenyl	1.0	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.0	ug/l	1	-	U	Yes
4-Chloroaniline	5.0	ug/l	1	-	U	Yes
Carbazole	1.0	ug/l	1	-	U	Yes
Caprolactam	2.0	ug/l	1	-	U	Yes
Chrysene	1.0	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.0	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.0	ug/l	1	-	U	Yes

bis(2-Chloroisopropyl)ether	2.0	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.0	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.0	ug/l	1	-	U	Yes
1,4-Dioxane	105	ug/l	2	-	J	Yes ✓
Dibenzo(a,h)anthracene	1.0	ug/l	1	-	U	Yes
Dibenzofuran	5.0	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.0	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.0	ug/l	1	-	U	Yes
Diethyl phthalate	2.0	ug/l	1	-	U	Yes
Dimethyl phthalate	2.0	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.0	ug/l	1	-	U	Yes
Fluoranthene	0.54	ug/l	1	J	J	Yes
Fluorene	1.0	ug/l	1	-	U	Yes
Hexachlorobenzene	1.0	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.0	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.0	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.0	ug/l	1	-	U	Yes
Isophorone	2.0	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Nitroaniline	5.0	ug/l	1	-	U	Yes
3-Nitroaniline	5.0	ug/l	1	-	U	Yes
4-Nitroaniline	5.0	ug/l	1	-	U	Yes
Nitrobenzene	2.0	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.0	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.0	ug/l	1	-	U	Yes
Phenanthrene	1.0	ug/l	1	-	U	Yes
Pyrene	1.0	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.0	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.050	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.050	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.10	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.10	ug/l	1	-	U	Yes
Chrysene	0.10	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.10	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.10	ug/l	1	-	U	Yes
Naphthalene	0.10	ug/l	1	-	U	Yes

Sample ID: JC34340-8
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.5	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.5	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.5	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.5	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.5	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.4	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.5	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.5	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.5	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.5	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	1.5	ug/l	1	J	J	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes

bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
1,4-Dioxane	220	ug/l	5	-	J	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.5	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	3.8	ug/l	1	-	-	Yes
Fluoranthene	0.50	ug/l	1	J	J	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	UJ	Yes
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.0	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.5	ug/l	1	-	U	Yes
3-Nitroaniline	5.5	ug/l	1	-	U	Yes
4-Nitroaniline	5.5	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.5	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.055	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.055	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.11	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.11	ug/l	1	-	U	Yes
Chrysene	0.11	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.11	ug/l	1	-	U	Yes
Naphthalene	0.11	ug/l	1	-	U	Yes

Sample ID: JC34340-9
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.3	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.3	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.1	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.3	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.3	ug/l	1	-	U	Yes
2-Methylphenol	2.1	ug/l	1	-	U	Yes
3&4-Methylphenol	2.1	ug/l	1	-	U	Yes
2-Nitrophenol	5.3	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.3	ug/l	1	-	U	Yes
Phenol	2.1	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.3	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.3	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.3	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.1	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.1	ug/l	1	-	U	Yes
Benzaldehyde	5.3	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.1	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.1	ug/l	1	-	U	Yes
4-Chloroaniline	5.3	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.1	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.1	ug/l	1	-	U	Yes

bis(2-Chloroethyl)ether	2.1	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.1	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.1	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.1	ug/l	1	-	U	Yes
1,4-Dioxane	19.3	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.3	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.1	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.1	ug/l	1	-	U	Yes
Diethyl phthalate	2.1	ug/l	1	-	U	Yes
Dimethyl phthalate	2.1	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.1	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	UJ	Yes ✓
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.1	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.1	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.3	ug/l	1	-	U	Yes
3-Nitroaniline	5.3	ug/l	1	-	U	Yes
4-Nitroaniline	5.3	ug/l	1	-	U	Yes
Nitrobenzene	2.1	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.1	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.3	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.1	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.053	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.053	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.11	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.11	ug/l	1	-	U	Yes
Chrysene	0.11	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.11	ug/l	1	-	U	Yes
Naphthalene	0.11	ug/l	1	-	U	Yes

Sample ID: JC34340-10
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.1	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.1	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.0	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.1	ug/l	1	-	U	Yes
2,4-Dinitrophenol	10	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.1	ug/l	1	-	U	Yes
2-Methylphenol	2.0	ug/l	1	-	U	Yes
3&4-Methylphenol	2.0	ug/l	1	-	U	Yes
2-Nitrophenol	5.1	ug/l	1	-	U	Yes
4-Nitrophenol	10	ug/l	1	-	U	Yes
Pentachlorophenol	4.0	ug/l	1	-	U	Yes
Phenol	2.0	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.1	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.1	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.1	ug/l	1	-	U	Yes
Acenaphthene	1.0	ug/l	1	-	U	Yes
Acenaphthylene	1.0	ug/l	1	-	U	Yes
Acetophenone	2.0	ug/l	1	-	U	Yes
Anthracene	1.0	ug/l	1	-	U	Yes
Atrazine	2.0	ug/l	1	-	U	Yes
Benzaldehyde	5.1	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.0	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.0	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.0	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.0	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.0	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.0	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.0	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.0	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.0	ug/l	1	-	U	Yes
4-Chloroaniline	5.1	ug/l	1	-	U	Yes
Carbazole	1.0	ug/l	1	-	U	Yes
Caprolactam	2.0	ug/l	1	-	U	Yes
Chrysene	1.0	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.0	ug/l	1	-	U	Yes

bis(2-Chloroethyl)ether	2.0	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.0	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.0	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.0	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.0	ug/l	1	-	U	Yes
1,4-Dioxane	27.6	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	1.0	ug/l	1	-	U	Yes
Dibenzofuran	5.1	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.0	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.0	ug/l	1	-	U	Yes
Diethyl phthalate	2.0	ug/l	1	-	U	Yes
Dimethyl phthalate	2.0	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.0	ug/l	1	-	U	Yes
Fluoranthene	1.0	ug/l	1	-	U	Yes
Fluorene	1.0	ug/l	1	-	U	Yes
Hexachlorobenzene	1.0	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.0	ug/l	1	-	UJ	Yes ✓
Hexachlorocyclopentadiene	10	ug/l	1	-	U	Yes
Hexachloroethane	2.0	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.0	ug/l	1	-	U	Yes
Isophorone	2.0	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.0	ug/l	1	-	U	Yes
2-Nitroaniline	5.1	ug/l	1	-	U	Yes
3-Nitroaniline	5.1	ug/l	1	-	U	Yes
4-Nitroaniline	5.1	ug/l	1	-	U	Yes
Nitrobenzene	2.0	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.0	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.1	ug/l	1	-	U	Yes
Phenanthrene	1.0	ug/l	1	-	U	Yes
Pyrene	1.0	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.0	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.051	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.051	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.10	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.10	ug/l	1	-	U	Yes
Chrysene	0.10	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.10	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.10	ug/l	1	-	U	Yes
Naphthalene	0.10	ug/l	1	-	U	Yes

Sample ID: JC34340-11
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.5	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.5	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.5	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.5	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.5	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.4	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.5	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.5	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.5	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.5	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	5.5	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes

bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.5	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	UJ	Yes ✓
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.5	ug/l	1	-	U	Yes
3-Nitroaniline	5.5	ug/l	1	-	U	Yes
4-Nitroaniline	5.5	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.5	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.055	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.055	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.11	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.11	ug/l	1	-	U	Yes
Chrysene	0.11	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.11	ug/l	1	-	U	Yes
Naphthalene	0.11	ug/l	1	-	U	Yes
1,4-Dioxane	0.311	ug/l	1	-	-	Yes

Sample ID: JC34340-12
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: AQ - Field Blank Water

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.4	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.4	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.4	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.4	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.4	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.3	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.4	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.4	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.4	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.4	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	5.4	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes

bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.4	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	1.9	ug/l	1	J	J	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	UJ	Yes ✓
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.4	ug/l	1	-	U	Yes
3-Nitroaniline	5.4	ug/l	1	-	U	Yes
4-Nitroaniline	5.4	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.4	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.054	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.054	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.11	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.11	ug/l	1	-	U	Yes
Chrysene	0.11	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.11	ug/l	1	-	U	Yes
Naphthalene	0.11	ug/l	1	-	U	Yes
1,4-Dioxane	0.11	ug/l	1	-	U	Yes

Sample ID: JC34340-15
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: AQ- Equipment Blank

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.6	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.6	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.6	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.6	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.6	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.4	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.6	ug/l	1	-	UJ	Yes
2,4,5-Trichlorophenol	5.6	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.6	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.6	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	5.6	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes

bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.6	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	UJ	Yes ✓
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.6	ug/l	1	-	U	Yes
3-Nitroaniline	5.6	ug/l	1	-	U	Yes
4-Nitroaniline	5.6	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.6	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.056	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.056	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.11	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.11	ug/l	1	-	U	Yes
Chrysene	0.11	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.11	ug/l	1	-	U	Yes
Naphthalene	0.11	ug/l	1	-	U	Yes
1,4-Dioxane	0.11	ug/l	1	-	U	Yes

Sample ID: JC34340-16
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.4	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.4	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.4	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.4	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.4	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.3	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.4	ug/l	1	-	UJ	Yes ✓
2,4,5.4-Trichlorophenol	5.4	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.4	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.4	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	5.4	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes

bis(2-Chloroethyl)ether	2.2	ug/l	1	-	UJ	Yes ✓
bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
1,4-Dioxane	1520	ug/l	50	-	-	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.4	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	UJ	Yes ✓
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.4	ug/l	1	-	U	Yes
3-Nitroaniline	5.4	ug/l	1	-	U	Yes
4-Nitroaniline	5.4	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.4	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.054	ug/l	1	-	U	Yes
Benzo(a)pyrene	0.054	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	0.11	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	0.11	ug/l	1	-	U	Yes
Chrysene	0.11	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	0.11	ug/l	1	-	U	Yes
Naphthalene	0.236	ug/l	1	-	-	Yes

Sample ID: JC34340-16MS
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	31.3	ug/l	1	-	-	Yes
4-Chloro-3-methyl phenol	37.7	ug/l	1	-	-	Yes
2,4-Dichlorophenol	41.8	ug/l	1	-	-	Yes
2,4-Dimethylphenol	40.7	ug/l	1	-	-	Yes
2,4-Dinitrophenol	102	ug/l	1	-	-	Yes
4,6-Dinitro-o-cresol	49.0	ug/l	1	-	-	Yes
2-Methylphenol	30.0	ug/l	1	-	-	Yes
3&4-Methylphenol	29.0	ug/l	1	-	-	Yes
2-Nitrophenol	36.2	ug/l	1	-	-	Yes
4-Nitrophenol	34.0	ug/l	1	-	-	Yes
Pentachlorophenol	54.7	ug/l	1	-	-	Yes
Phenol	18.2	ug/l	1	-	-	Yes
2,3,4,6-Tetrachlorophenol	47.0	ug/l	1	-	-	Yes
2,4,5-Trichlorophenol	44.3	ug/l	1	-	-	Yes
2,4,6-Trichlorophenol	45.4	ug/l	1	-	-	Yes
Acenaphthene	40.0	ug/l	1	-	-	Yes
Acenaphthylene	36.5	ug/l	1	-	-	Yes
Acetophenone	37.2	ug/l	1	-	-	Yes
Anthracene	41.8	ug/l	1	-	-	Yes
Atrazine	52.6	ug/l	1	-	-	Yes
Benzaldehyde	30.0	ug/l	1	-	-	Yes
Benzo(a)anthracene	42.8	ug/l	1	-	-	Yes
Benzo(a)pyrene	41.4	ug/l	1	-	-	Yes
Benzo(b)fluoranthene	43.5	ug/l	1	-	-	Yes
Benzo(g,h,i)perylene	35.3	ug/l	1	-	-	Yes
Benzo(k)fluoranthene	42.2	ug/l	1	-	-	Yes
4-Bromophenyl phenyl ether	43.9	ug/l	1	-	-	Yes
Butyl benzyl phthalate	35.2	ug/l	1	-	-	Yes
1,1'-Biphenyl	37.4	ug/l	1	-	-	Yes
2-Chloronaphthalene	37.9	ug/l	1	-	-	Yes
4-Chloroaniline	22.2	ug/l	1	-	-	Yes
Carbazole	39.4	ug/l	1	-	-	Yes
Caprolactam	10.9	ug/l	1	-	-	Yes
Chrysene	39.8	ug/l	1	-	-	Yes
bis(2-Chloroethoxy)methane	33.1	ug/l	1	-	-	Yes
bis(2-Chloroethyl)ether	32.6	ug/l	1	-	-	Yes
bis(2-Chloroisopropyl)ether	31.4	ug/l	1	-	-	Yes

4-Chlorophenyl phenyl ether	45.6	ug/l	1	-	-	Yes
2,4-Dinitrotoluene	47.3	ug/l	1	-	-	Yes
2,6-Dinitrotoluene	44.9	ug/l	1	-	-	Yes
3,3'-Dichlorobenzidine	36.7	ug/l	1	-	-	Yes
1.4-Dioxane	1580	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	37.2	ug/l	1	-	-	Yes
Dibenzofuran	39.7	ug/l	1	-	-	Yes
Di-n-butyl phthalate	39.4	ug/l	1	-	-	Yes
Di-n-octyl phthalate	36.8	ug/l	1	-	-	Yes
Diethyl phthalate	40.9	ug/l	1	-	-	Yes
Dimethyl phthalate	41.0	ug/l	1	-	-	Yes
bis(2-Ethylhexyl)phthalate	34.0	ug/l	1	-	-	Yes
Fluoranthene	45.8	ug/l	1	-	-	Yes
Fluorene	43.6	ug/l	1	-	-	Yes
Hexachlorobenzene	44.1	ug/l	1	-	-	Yes
Hexachlorobutadiene	37.5	ug/l	1	-	-	Yes
Hexachlorocyclopentadiene	64.3	ug/l	1	-	-	Yes
Hexachloroethane	33.8	ug/l	1	-	-	Yes
Indeno(1,2,3-cd)pyrene	39.8	ug/l	1	-	-	Yes
Isophorone	34.9	ug/l	1	-	-	Yes
1-Methylnaphthalene	36.1	ug/l	1	-	-	Yes
2-Methylnaphthalene	37.4	ug/l	1	-	-	Yes
2-Nitroaniline	39.9	ug/l	1	-	-	Yes
3-Nitroaniline	24.4	ug/l	1	-	-	Yes
4-Nitroaniline	37.1	ug/l	1	-	-	Yes
Nitrobenzene	34.9	ug/l	1	-	-	Yes
N-Nitroso-di-n-propylamine	34.3	ug/l	1	-	-	Yes
Nitrosodiphenylamine	39.7	ug/l	1	-	-	Yes
Phenanthrene	41.8	ug/l	1	-	-	Yes
Pyrene	39.8	ug/l	1	-	-	Yes
1,2,4,5-Tetrachlorobenzene	48.5	ug/l	1	-	-	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.773	ug/l	1	-	-	Yes
Benzo(a)pyrene	0.675	ug/l	1	-	-	Yes
Benzo(b)fluoranthene	0.756	ug/l	1	-	-	Yes
Benzo(k)fluoranthene	0.712	ug/l	1	-	-	Yes
Chrysene	0.740	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	0.557	ug/l	1	-	-	Yes
Indeno(1,2,3-cd)pyrene	0.515	ug/l	1	-	-	Yes
Naphthalene	0.875	ug/l	1	-	-	Yes
1,4-Dioxane	1240	ug/l	1	EB	EB	Yes

Sample ID: JC34340-16MSD
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	30.9	ug/l	1	-	-	Yes
4-Chloro-3-methyl phenol	36.5	ug/l	1	-	-	Yes
2,4-Dichlorophenol	40.5	ug/l	1	-	-	Yes
2,4-Dimethylphenol	39.4	ug/l	1	-	-	Yes
2,4-Dinitrophenol	98.6	ug/l	1	-	-	Yes
4,6-Dinitro-o-cresol	45.7	ug/l	1	-	-	Yes
2-Methylphenol	30.5	ug/l	1	-	-	Yes
3&4-Methylphenol	28.3	ug/l	1	-	-	Yes
2-Nitrophenol	35.4	ug/l	1	-	-	Yes
4-Nitrophenol	33.6	ug/l	1	-	-	Yes
Pentachlorophenol	50.7	ug/l	1	-	-	Yes
Phenol	17.9	ug/l	1	-	-	Yes
2,3,4,6-Tetrachlorophenol	45.7	ug/l	1	-	-	Yes
2,4,5-Trichlorophenol	43.1	ug/l	1	-	-	Yes
2,4,6-Trichlorophenol	43.7	ug/l	1	-	-	Yes
Acenaphthene	37.8	ug/l	1	-	-	Yes
Acenaphthylene	34.3	ug/l	1	-	-	Yes
Acetophenone	35.8	ug/l	1	-	-	Yes
Anthracene	39.0	ug/l	1	-	-	Yes
Atrazine	49.5	ug/l	1	-	-	Yes
Benzaldehyde	29.4	ug/l	1	-	-	Yes
Benzo(a)anthracene	40.2	ug/l	1	-	-	Yes
Benzo(a)pyrene	39.6	ug/l	1	-	-	Yes
Benzo(b)fluoranthene	41.7	ug/l	1	-	-	Yes
Benzo(g,h,i)perylene	33.4	ug/l	1	-	-	Yes
Benzo(k)fluoranthene	39.4	ug/l	1	-	-	Yes
4-Bromophenyl phenyl ether	40.3	ug/l	1	-	-	Yes
Butyl benzyl phthalate	33.2	ug/l	1	-	-	Yes
1,1'-Biphenyl	35.3	ug/l	1	-	-	Yes
2-Chloronaphthalene	35.7	ug/l	1	-	-	Yes
4-Chloroaniline	20.5	ug/l	1	-	-	Yes
Carbazole	37.3	ug/l	1	-	-	Yes
Caprolactam	11.1	ug/l	1	-	-	Yes
Chrysene	37.7	ug/l	1	-	-	Yes
bis(2-Chloroethoxy)methane	31.0	ug/l	1	-	-	Yes
bis(2-Chloroethyl)ether	33.7	ug/l	1	-	-	Yes
bis(2-Chloroisopropyl)ether	31.2	ug/l	1	-	-	Yes

4-Chlorophenyl phenyl ether	43.0	ug/l	1	-	-	Yes
2,4-Dinitrotoluene	46.4	ug/l	1	-	-	Yes
2,6-Dinitrotoluene	42.7	ug/l	1	-	-	Yes
3,3'-Dichlorobenzidine	27.1	ug/l	1	-	-	Yes
1,4-Dioxane	1800	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	34.8	ug/l	1	-	-	Yes
Dibenzofuran	38.5	ug/l	1	-	-	Yes
Di-n-butyl phthalate	37.4	ug/l	1	-	-	Yes
Di-n-octyl phthalate	34.7	ug/l	1	-	-	Yes
Diethyl phthalate	39.5	ug/l	1	-	-	Yes
Dimethyl phthalate	40.0	ug/l	1	-	-	Yes
bis(2-Ethylhexyl)phthalate	32.1	ug/l	1	-	-	Yes
Fluoranthene	42.8	ug/l	1	-	-	Yes
Fluorene	41.6	ug/l	1	-	-	Yes
Hexachlorobenzene	40.6	ug/l	1	-	-	Yes
Hexachlorobutadiene	36.9	ug/l	1	-	-	Yes
Hexachlorocyclopentadiene	63.4	ug/l	1	-	-	Yes
Hexachloroethane	35.0	ug/l	1	-	-	Yes
Indeno(1,2,3-cd)pyrene	37.3	ug/l	1	-	-	Yes
Isophorone	33.3	ug/l	1	-	-	Yes
1-Methylnaphthalene	34.2	ug/l	1	-	-	Yes
2-Methylnaphthalene	35.1	ug/l	1	-	-	Yes
2-Nitroaniline	40.0	ug/l	1	-	-	Yes
3-Nitroaniline	26.5	ug/l	1	-	-	Yes
4-Nitroaniline	34.3	ug/l	1	-	-	Yes
Nitrobenzene	33.0	ug/l	1	-	-	Yes
N-Nitroso-di-n-propylamine	33.2	ug/l	1	-	-	Yes
Nitrosodiphenylamine	36.7	ug/l	1	-	-	Yes
Phenanthrene	39.4	ug/l	1	-	-	Yes
Pyrene	37.9	ug/l	1	-	-	Yes
1,2,4,5-Tetrachlorobenzene	45.2	ug/l	1	-	-	Yes
METHOD: 8270D (SIM)						
Benzo(a)anthracene	0.591	ug/l	1	-	-	Yes
Benzo(a)pyrene	0.420	ug/l	1	-	-	Yes
Benzo(b)fluoranthene	0.549	ug/l	1	-	-	Yes
Benzo(k)fluoranthene	0.481	ug/l	1	-	-	Yes
Chrysene	0.576	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	0.352	ug/l	1	-	-	Yes
Indeno(1,2,3-cd)pyrene	0.314	ug/l	1	-	-	Yes
Naphthalene	0.730	ug/l	1	-	-	Yes
1,4-Dioxane	1450	ug/l	1	-	-	Yes

Project Number:_JC34340_____
Date:_____December_20-22,_2016_____
Shipping Date:___December_22,_2016_____
EPA Region:_____2_____

REVIEW OF SEMIVOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: EPA Hazardous Waste Support Section, SOP HW-35A, July 2015 –Revision 0. *Semivolatile Data Validation.* The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _Accutest_____ data package received has been reviewed and the quality control and performance data summarized. The data review for SVOCs included:

Lab. Project/SDG No.: ____JC34340_____ Sample matrix: ____Groundwater___
No. of Samples: _____14_SIM/14_SCAN_____

Trip blank No.: _____-_____
Field blank No.: _____JC34340-3;_JC34340-12_____
Equipment blank No.:_____JC34340-4;_JC34340-15_____
Field duplicate No.:_____JC34340-7/JC34340-8_____

___X___ Data Completeness
___X___ Holding Times
___X___ GC/MS Tuning
___X___ Internal Standard Performance
___X___ Blanks
___X___ Surrogate Recoveries
___X___ Matrix Spike/Matrix Spike Duplicate
___X___ Laboratory Control Spikes
___X___ Field Duplicates
___X___ Calibrations
___X___ Compound Identifications
___X___ Compound Quantitation
___X___ Quantitation Limits

_Overall Comments:_SVOCs_TCL_special_list_analyzed_by_method_SW846-8270D;_Selected_PAHs _and_1,4-Dioxane_analyzed_by_method_SW846-8270D_(SIM)_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____
Date:___January_27,_2017_____

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were met __X__
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED/ANALYZED	pH	ACTION
JC34340-3	12/20/16	12/29/16	-	Confirmation run; the acid spike standard was not added to the LCS. No action.
All samples extracted and analyzed within method recommended holding time except for the cases described in this document. Sample preservation appropriate.				

Cooler temperature (Criteria: 4 ± 2 °C): _____5.4°C_____

Actions

Results will be qualified based on the criteria of the following Table:

Table 1. Holding Time Actions for Semivolatile Analyses

Matrix	Preserved	Criteria	Action	
			Detected Associated Compounds	Non-Detected Associated Compounds
Aqueous	No	≤ 7 days (for extraction) ≤ 40 days (for analysis)	Use professional judgment	
	No	> 7 days (for extraction) > 40 days (for analysis)	J	Use professional judgment
	Yes	≤ 7 days (for extraction) ≤ 40 days (for analysis)	No qualification	
	Yes	> 7 days (for extraction) > 40 days (for analysis)	J	UJ
	Yes/No	Grossly Exceeded	J	UJ or R
Non-Aqueous	No	≤ 14 days (for extraction) ≤ 40 days (for analysis)	Use professional judgment	
	No	> 14 days (for extraction) > 40 days (for analysis)	J	Use professional judgment
	Yes	≤ 14 days (for extraction) ≤ 40 days (for analysis)	No qualification	
	Yes	> 14 days (for extraction) > 40 days (for analysis)	J	UJ
	Yes/No	Grossly Exceeded	J	UJ or R

All criteria were met _X__
Criteria were not met see below ____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

_X__ The DFTPP performance results were reviewed and found to be within the specified criteria.

_X__ DFTPP tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

Notes: These requirements do not apply when samples are analyzed by the Selected Ion Monitoring (SIM) technique.

All mass spectrometer conditions must be identical to those used during the sample analysis. Background subtraction actions resulting in spectral distortion are unacceptable

Notes: No data should be qualified based of DFTPP failure.

The requirement to analyze the instrument performance check solution is optional when analysis of PAHs/pentachlorophenol is to be performed by the SIM technique.

List the samples affected:

_____

_____

_____

_____

Actions:

1. If sample are analyzed without a preceding valid instrument performance check or are analyzed 12 hours after the Instrument Performance Check, qualify all data in those samples as unusable (R).
2. If ion abundance criteria are not met, use professional judgment to determine to what extent the data may be utilized.
3. State in the Data Review Narrative, decisions to use analytical data associated with DFTPP instrument performance checks not meeting the contract requirements.
4. Use professional judgment to determine if associated data should be qualified based on the spectrum of the mass calibration compounds.

All criteria were met ___X___
Criteria were not met
and/or see below _____

INITIAL CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____12/21/16_(SIM)_____ _____12/15/16_(SIM)_____
Instrument ID numbers:_____GCMS3M_____ _____GCMS4M_____
Matrix/Level:_____Aqueous/low_____ _____Aqueous/low_____

Date of initial calibration:_11/16/16;_12/01/16_(SCAN)_
Instrument ID numbers:_____GCMS2M_____
Matrix/Level:_____Aqueous/low_____

Date of initial calibration:___12/23/16_(SCAN)_____ _____12/27-28/16_(SCAN)_____
Instrument ID numbers:_____GCMS5P_____ _____GCMSM_____
Matrix/Level:_____Aqueous/low_____ _____Aqueous/low_____

Date of initial calibration:__12/28-29/16_(SCAN)_____
Instrument ID numbers:_____GCMSP_____
Matrix/Level:_____Aqueous/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and initial calibration verification meets the method and guidance validation document performance criteria.				

Note: Instruments GCMS3M; GCMS4P; and GCMS3P were also employed for running QC samples for this data packages. QC samples not validated.

Actions:

Qualify the initial calibration analytes listed in Table 2 using the following criteria:

Table 3. Initial Calibration Actions for Semivolatile Analysis

Criteria	Action	
	Detect	Non-detect
Initial Calibration not performed at specified frequency and sequence	Use professional judgment R	Use professional judgment R
Initial Calibration not performed at the specified concentrations	J	UJ
RRF < Minimum RRF in Table 2 for target analyte	Use professional judgment J+ or R	R
RRF ≥ Minimum RRF in Table 2 for target analyte	No qualification	No qualification
%RSD > Maximum %RSD in Table 2 for target analyte	J	Use professional judgment
%RSD ≤ Maximum %RSD in Table 2 for target analyte	No qualification	No qualification

Initial Calibration

Table 2. RRF, %RSD, and %D Acceptance Criteria in Initial Calibration and CCV for Semivolatil Analysis

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Opening Maximum %D[1]
1,4-Dioxane	0.010	40.0	± 40.0	± 50.0
Benzaldehyde	0.100	40.0	± 40.0	± 50.0
Phenol	0.080	20.0	± 20.0	± 25.0
Bis(2-chloroethyl)ether	0.100	20.0	± 20.0	± 25.0
2-Chlorophenol	0.200	20.0	± 20.0	± 25.0
2-Methylphenol	0.010	20.0	± 20.0	± 25.0
3-Methylphenol	0.010	20.0	± 20.0	± 25.0
2,2'-Oxybis-(1-chloropropane)	0.010	20.0	± 25.0	± 50.0
Acetophenone	0.060	20.0	± 20.0	± 25.0
4-Methylphenol	0.010	20.0	± 20.0	± 25.0
N-Nitroso-di-n-propylamine	0.080	20.0	± 25.0	± 25.0
Hexachloroethane	0.100	20.0	± 20.0	± 25.0
Nitrobenzene	0.090	20.0	± 20.0	± 25.0
Isophorone	0.100	20.0	± 20.0	± 25.0
2-Nitrophenol	0.060	20.0	± 20.0	± 25.0
2,4-Dimethylphenol	0.050	20.0	± 25.0	± 50.0
Bis(2-chloroethoxy)methane	0.080	20.0	± 20.0	± 25.0
2,4-Dichlorophenol	0.060	20.0	± 20.0	± 25.0
Naphthalene	0.200	20.0	± 20.0	± 25.0
4-Chloroaniline	0.010	40.0	± 40.0	± 50.0
Hexachlorobutadiene	0.040	20.0	± 20.0	± 25.0
Caprolactam	0.010	40.0	± 30.0	± 50.0
4-Chloro-3-methylphenol	0.040	20.0	± 20.0	± 25.0
2-Methylnaphthalene	0.100	20.0	± 20.0	± 25.0
Hexachlorocyclopentadiene	0.010	40.0	± 40.0	± 50.0
2,4,6-Trichlorophenol	0.090	20.0	± 20.0	± 25.0
2,4,5-Trichlorophenol	0.100	20.0	± 20.0	± 25.0
1,1'-Biphenyl	0.200	20.0	± 20.0	± 25.0

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Opening Maximum %D[1]
2-Chloronaphthalene	0.300	20.0	± 20.0	± 25.0
2-Nitroaniline	0.060	20.0	± 25.0	± 25.0
Dimethylphthalate	0.300	20.0	± 25.0	± 25.0
2,6-Dinitrotoluene	0.080	20.0	± 20.0	± 25.0
Acenaphthylene	0.400	20.0	± 20.0	± 25.0
3-Nitroaniline	0.010	20.0	± 25.0	± 50.0
Acenaphthene	0.200	20.0	± 20.0	± 25.0
2,4-Dinitrophenol	0.010	40.0	± 50.0	± 50.0
4-Nitrophenol	0.010	40.0	± 40.0	± 50.0
Dibenzofuran	0.300	20.0	± 20.0	± 25.0
2,4-Dinitrotoluene	0.070	20.0	± 20.0	± 25.0
Diethylphthalate	0.300	20.0	± 20.0	± 25.0
1,2,4,5-Tetrachlorobenzene	0.100	20.0	± 20.0	± 25.0
4-Chlorophenyl-phenylether	0.100	20.0	± 20.0	± 25.0
Fluorene	0.200	20.0	± 20.0	± 25.0
4-Nitroaniline	0.010	40.0	± 40.0	± 50.0
4,6-Dinitro-2-methylphenol	0.010	40.0	± 30.0	± 50.0
4-Bromophenyl-phenyl ether	0.070	20.0	± 20.0	± 25.0
N-Nitrosodiphenylamine	0.100	20.0	± 20.0	± 25.0
Hexachlorobenzene	0.050	20.0	± 20.0	± 25.0
Atrazine	0.010	40.0	± 25.0	± 50.0
Pentachlorophenol	0.010	40.0	± 40.0	± 50.0
Phenanthrene	0.200	20.0	± 20.0	± 25.0
Anthracene	0.200	20.0	± 20.0	± 25.0
Carbazole	0.050	20.0	± 20.0	± 25.0
Di-n-butylphthalate	0.500	20.0	± 20.0	± 25.0
Fluoranthene	0.100	20.0	± 20.0	± 25.0
Pyrene	0.400	20.0	± 25.0	± 50.0
Butylbenzylphthalate	0.100	20.0	± 25.0	± 50.0

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Opening Maximum %D[1]
3,3'-Dichlorobenzidine	0.010	40.0	± 40.0	± 50.0
Benzo(a)anthracene	0.300	20.0	± 20.0	± 25.0
Chrysene	0.200	20.0	± 20.0	± 50.0
Bis(2-ethylhexyl) phthalate	0.200	20.0	± 25.0	± 50.0
Di-n-octylphthalate	0.010	40.0	± 40.0	± 50.0
Benzo(b)fluoranthene	0.010	20.0	± 25.0	± 50.0
Benzo(k)fluoranthene	0.010	20.0	± 25.0	± 50.0
Benzo(a)pyrene	0.010	20.0	± 20.0	± 50.0
Indeno(1,2,3-cd)pyrene	0.010	20.0	± 25.0	± 50.0
Dibenzo(a,h)anthracene	0.010	20.0	± 25.0	± 50.0
Benzo(g,h,i)perylene	0.010	20.0	± 30.0	± 50.0
2,3,4,6-Tetrachlorophenol	0.040	20.0	± 20.0	± 50.0
Naphthalene	0.600	20.0	± 25.0	± 25.0
2-Methylnaphthalene	0.300	20.0	± 20.0	± 25.0
Acenaphthylene	0.900	20.0	± 20.0	± 25.0
Acenaphthene	0.500	20.0	± 20.0	± 25.0
Fluorene	0.700	20.0	± 25.0	± 50.0
Phenanthrene	0.300	20.0	± 25.0	± 50.0
Anthracene	0.400	20.0	± 25.0	± 50.0
Fluoranthene	0.400	20.0	± 25.0	± 50.0
Pyrene	0.500	20.0	± 30.0	± 50.0
Benzo(a)anthracene	0.400	20.0	± 25.0	± 50.0
Chyrsene	0.400	20.0	± 25.0	± 50.0
Benzo(b)fluoranthene	0.100	20.0	± 30.0	± 50.0
Benzo(k)fluoranthene	0.100	20.0	± 30.0	± 50.0
Benzo(a)pyrene	0.100	20.0	± 25.0	± 50.0
Indeno(1,2,3-cd)pyrene	0.100	20.0	± 40.0	± 50.0
Dibenzo(a,h)anthracene	0.010	25.0	± 40.0	± 50.0
Benzo(g,h,i)perylene	0.020	25.0	± 40.0	± 50.0

Pentachlorophenol	0.010	40.0	± 50.0	± 50.0
Deuterated Monitoring Compounds				

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Closing Maximum %D
1,4-Dioxane-d_8	0.010	20.0	± 25.0	± 50.0
Phenol-d_5	0.010	20.0	± 25.0	± 25.0
Bis-(2-chloroethyl)ether-d_8	0.100	20.0	± 20.0	± 25.0
2-Chlorophenol-d_4	0.200	20.0	± 20.0	± 25.0
4-Methylphenol-d_8	0.010	20.0	± 20.0	± 25.0
4-Chloroaniline-d_4	0.010	40.0	± 40.0	± 50.0
Nitrobenzene-d_5	0.050	20.0	± 20.0	± 25.0
2-Nitrophenol-d_4	0.050	20.0	± 20.0	± 25.0
2,4-Dichlorophenol-d_3	0.060	20.0	± 20.0	± 25.0
Dimethylphthalate-d_6	0.300	20.0	± 20.0	± 25.0
Acenaphthylene-d_8	0.400	20.0	± 20.0	± 25.0
4-Nitrophenol-d_4	0.010	40.0	± 40.0	± 50.0
Fluorene-d_{10}	0.100	20.0	± 20.0	± 25.0
4,6-Dinitro-2-methylphenol-d_2	0.010	40.0	± 30.0	± 50.0
Anthracene-d_{10}	0.300	20.0	± 20.0	± 25.0
Pyrene-d_{10}	0.300	20.0	± 25.0	± 50.0
Benzo(a)pyrene-d_{12}	0.010	20.0	± 20.0	± 50.0
Fluoranthene-d_{10} (SIM)	0.400	20.0	± 25.0	± 50.0
2-Methylnaphthalene-d_{10} (SIM)	0.300	20.0	± 20.0	± 25.0

[1] If a closing CCV is acting as an opening CCV, all target analytes must meet the requirements for an opening CCV.

Note: If analysis by SIM technique is requested for PAH/pentachlorophenols, calibration standards analyzed at 0.10, 0.20, 0.40, 0.80, and 1.0 ng/uL for each target compound of interest and the associated DMCs. Pentachlorophenol will require only a four point initial calibration at 0.20, 0.40, 0.80, and 1.0 ng/uL.

All criteria were met _____
Criteria were not met
and/or see below ____X____

CONTINUING CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	11/16/16; 12/01/16 (SCAN)	12/21/16 (SIM)
Date of initial calibration verification (ICV):	11/16-17/16; 12/01/16	12/21-22/16
Date of continuing calibration verification (CCV):	12/27/16; 12/29/16	12/29/16; 12/30/16
	01/03/17	12/30/16
Date of closing CCV:	-	-
Instrument ID numbers:	GCMS2M	GCMS3M
Matrix/Level:	Aqueous/low	Aqueous/low
Date of initial calibration:	12/15/16 (SIM)	12/23/16 (Scan)
Date of initial calibration verification (ICV):	12/15/16; 12/19/16	12/24/16; 12/27/16
Date of continuing calibration verification (CCV):	12/29-31/16	12/29/16; 12/30/16
Date of closing CCV:	-	-
Instrument ID numbers:	GCMS4M	GCM5P
Matrix/Level:	Aqueous/low	Aqueous/low
Date of initial calibration:	11/28-29/16 (Scan)	12/27-28/16 (Scan)
Date of initial calibration verification (ICV):	11/29-03/16	12/27/28/16
Date of continuing calibration verification (CCV):	12/30/16; 01/03/17	01/03-04/17
Date of closing CCV:	-	-
Instrument ID numbers:	GCMSP	GCMSM
Matrix/Level:	Aqueous/low	Aqueous/low

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
GCMS2M				
12/27/16	cc3953-50	27.6	1,4-dioxane*^	JC34340-1
		35.1	Hexachlorocyclopentadiene*	
		34.7	Pentachlorophenol*	
		-27.8	di-n-octylphthalate*	
		-35.4	Indeno(1,2,3-cd)pyrene*	
12/29/16	cc3953-25	29.6	1,4-dioxane*^^	JC34340-7
		37.5	Hexachlorocyclopentadiene*	
		40.8 ✓	Pentachlorophenol	
		-25.3 ✓	Butylbenzylphthalate	
		-27.6	di-n-octylphthalate*	
		-33.4	Indeno(1,2,3-cd)pyrene*	
01/03/17	cc3953-50	27.8	1,4-dioxane^*	JC34340-4
		27.9	Hexachlorocyclopentadiene*	
		27.2	Pentachlorophenol*	

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
GCMS2M				
01/03/17	cc3953-50	-34.6	di-n-octylphthalate*	JC34340-4
		-28.1	Indeno(1,2,3-cd)pyrene*	
01/03/17	cc3953-25	23.8	1,4-dioxane*	JC34340-2
		40.2 ✓	Hexachlorocyclopentadiene	
		20.2 ✓	2,3,4,6-tetrachlorophenol	
		30.6	Pentachlorophenol*	
		-26.0	di-n-octylphthalate*	
		-30.3	Indeno(1,2,3-cd)pyrene*	
GCMS3M				
12/30/16	cc3145-0.5	-24.6	1,4-dioxane*	JC34340-9; -10; -12; -8
GCMS5P				
12/29/16	cc1717-50	21.4 ✓	Hexachlorobutadiene	JC34340-8; -9; -10; -11; -12
		26.0	Hexachlorocyclopentadiene*	
		26.9	4-nitrophenol*	
GCMSP				
12/30/16	cc4851-50	-45.1 ✓	bis(2-chloroethyl)ether	JC34340-3; -16
		24.8	4-chloroaniline*	
		-23.1 ✓	Hexachlorobutadiene	
		-30.8	2,4-dinitropheno*l	
		-29.1 ✓	2,3,4,6-tetrachlorophenol	
		-23.4	4,6-dinitro-2-methyl phenol*	
01/03/17	CC4851-50	-29.7 ✓	Hexachlorobutadiene	JC34340-16; -15
		-24.3 ✓	2,3,4,6-tetrachlorophenol	
		-21.3	4,6-dinitro-2-methyl phenol*	
		-24.8	Pentachlorophenol*	
01/03/17	CC4852-50	26.3	Benzaldehyde*	JC34340-16; -15

Note: Initial and continuing calibration verifications meet the method and guidance document required performance criteria except for the cases described in this document. Results qualified as estimated (J or UJ) in affected samples.

* % difference outside was method performance criteria but within the guidance document performance criteria. No action taken.

No action taken for QC samples.

^ Quantitated in the SIM mode.

^^ Reported from run on 01/04/17 (2x dilution)

No closing calibration verification included in data package. No action taken, professional judgment.

Actions:

Notes: Verify that the CCV is run at the required frequency (an opening and closing CCV must be run within 12-hour period).

All DMCs must meet the RRF values given in Table 2. No qualification of the data is necessary on DMCs RRF and %RSD/%D alone. Use professional judgment to evaluate DMCs and %RSD/%D data in conjunction with DMCs recoveries to determine the need for qualification of the data.

Qualify the initial calibration analytes listed in Table 2 using the following criteria in the CCVs:

Table 4. CCV Actions for Semivolatile Analysis

Criteria for Opening CCV	Criteria for Closing CCV	Action	
		Detect	Non-detect
CCV not performed at required frequency and sequence	CCV not performed at required frequency	Use professional judgment R	Use professional judgment R
CCV not performed at specified concentration	CCV not performed at specified concentration	Use professional judgment	Use professional judgment
RRF < Minimum RRF in Table 2 for target analyte	RRF < Minimum RRF in Table 2 for target analyte	Use professional judgment J or R	R
RRF ≥ Minimum RRF in Table 2 for target analyte	RRF ≥ Minimum RRF in Table 2 for target analyte	No qualification	No qualification
%D outside the Opening Maximum %D limits in Table 2 for target analyte	%D outside the Closing Maximum %D limits in Table 2 for target analyte	J	UJ
%D within the inclusive Opening Maximum %D limits in Table 2 for target analyte	%D within the inclusive Closing Maximum %D limits in Table 2 for target analyte	No qualification	No qualification

All criteria were met _____
Criteria were not met
and/or see below ____X__

BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Notes: The concentration of non-target compounds in all blanks must be less than or equal to 10 ug/L.

The concentration of target compounds in all blanks must be less than its CRQL listed in the method.

Samples taken from a drinking water tap do not have and associated field blank.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No_target_analytes_detected_in_method_blanks_except_for_the_cases_described_in_this_document				
12/30/16	OP99540A-MB1	Aq./low	1,4-Dioxane	0.390_ug/l

Note: No action taken. 1,4-dioxane not detected in sample JC34340-15 and reported from the scan mode run in sample JC34340-16.

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No_target_analytes_detected_in_the_field/equipment_blanks_analyzed_with_this_data_package_except_for_the_cases_described_in_this_document.				
12/30/16	JC34340-12	Aq./low	bis(2-Ethylhexyl)phthalate	1.9_ug/l

Note: No action taken, concentration below the reporting limit.

All criteria were met __X__
Criteria were not met
and/or see below _____

BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Qualify samples based on the criteria summarized in Table 5:

Table 5. Blank and TCLP/SPLP LEB Actions for Semivolatile Analysis

Blank Type	Blank Result	Sample Result	Action
Method, TCLP/SPLP LEB, Field	Detect	Non-detect	No qualification
	< CRQL	< CRQL	Report at CRQL and qualify as non-detect (U)
		≥ CRQL	Use professional judgment
	≥ CRQL	< CRQL	Report at CRQL and qualify as non-detect (U)
		≥ CRQL but < Blank Result	Report at sample results and qualify as non-detect (U) or as unusable (R)
		≥ CRQL and ≥ Blank Result	Use professional judgment
	Grossly high	Detect	Report at sample results and qualify as unusable (R)
	TIC > 5.0 ug/L (water) or 0.0050 mg/L (TCLP leachate) or TIC > 170 ug/Kg (soil)	Detect	Use professional judgment

List samples qualified

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met __X__
Criteria were not met
and/or see below _____

SURROGATE SPIKE RECOVERIES – DEUTERATED MONITORING COMPOUNDS (DMCs)

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries – deuterated monitoring compounds. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

Notes: Recoveries for DMCs in samples and blanks must be within the limits specified in Table 6.

The recovery limits for any of the compounds listed in Table 6 may be expanded at any time during the period of performance if USEPA determines that the limits are too restrictive.

If a DMC is not added in the samples and blanks or the concentrations of DMCs in the samples and blank not the specified, use professional judgment in qualifying the data.

Table 7. DMC Actions for Semivolatile Analysis

Criteria	Action	
	Detect	Non-detect
%R < 10% (excluding DMCs with 10% as a lower acceptance limit)	J-	R
10% ≤ %R (excluding DMCs with 10% as a lower acceptance limit) < Lower Acceptance Limit	J-	UJ
Lower Acceptance limit ≤ %R ≤ Upper Acceptance Limit	No qualification	No qualification
%R > Upper Acceptance Limit	J+	No qualification

List the percent recoveries (%Rs) which do not meet the criteria for DMCs (surrogate) recovery.

Matrix:___Groundwater_____

SAMPLE ID	SURROGATE COMPOUND	ACTION

_DMCs_meet_the_required_criteria_in_all_samples_analyzed_except_for_the_cases_described_in___
_this_document._Non-_deuterated_surrogates_added_to_the_samples_and_were_within_laboratory_
_recovery_limits_except_for_the_cases_described_in_this_document._____

Note: Surrogate standards not recovered in sample JC34340-16 due to dilution. Surrogate standards recovered within the laboratory control limits in the original run.

Table 8. Semivolatile DMCs and the Associated Target Analytes

1,4–Dioxane-d_8 (DMC-1)	**Phenol-d_5 (DMC-2)**	**Bis(2-Chloroethyl) ether-d_8 (DMC-3)**
1,4-Dioxane	Benzaldehyde Phenol	Bis(2-chloroethyl)ether 2,2'-Oxybis(1-chloropropane) Bis(2-chloroethoxy)methane
2-Chlorophenol-d_4 (DMC-4)	**4-Methylphenol-d_8 (DMC-5)**	**4-Chloroaniline-d_4 (DMC-6)**
2-Chlorophenol	2-Methylphenol 3-Methylphenol 4-Methylphenol 2,4-Dimethylphenol	4-Chloroaniline Hexachlorocyclopentadiene Dichlorobenzidine
Nitrobenzene-d_5 (DMC-7)	**2-Nitrophenol-d_4 (DMC-8)**	**2,4-Dichlorophenol-d_3 (DMC-9)**
Acetophenone N-Nitroso-di-n-propylamine Hexachloroethane Nitrobenzene 2,6-Dinitrotoluene 2,4-Dinitrotoluene N-Nitrosodiphenylamine	Isophorone 2-Nitrophenol	2,4-Dichlorophenol Hexachlorobutadiene Hexachlorocyclopentadiene 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 1,2,4,5-Tetrachlorobenzene *Pentachlorophenol 2,3,4,6-Tetrachlorophenol
Dimethylphthalate-d_6 (DMC-10)	**Acenaphthylene-d_8 (DMC-11)**	**4-Nitrophenol-d_4 (DMC-12)**
Caprolactam 1,1'-Biphenyl Dimethylphthalate Diethylphthalate Di-n-butylphthalate Butylbenzylphthalate Bis(2-ethylhexyl) phthalate Di-n-octylphthalate	*Naphthalene *2-Methylnaphthalene 2-Chloronaphthalene *Acenaphthylene *Acenaphthene	2-Nitroaniline 3-Nitroaniline 2,4-Dinitrophenol 4-Nitrophenol 4-Nitroaniline

Fluorene-d_{10} (DMC-13)	**4,6-Dinitro-2-methylphenol-d_2 (DMC-14)**	**Anthracene-d_{10} (DMC-15)**
Dibenzofuran *Fluorene 4-Chlorophenyl-phenylether 4-Bromophenyl-phenylether Carbazole	4,6-Dinitro-2-methylphenol	Hexachlorobenzene Atrazine *Phenanthrene *Anthracene
Pyrene-d_{10} (DMC-16)	**Benzo(a)pyrene-d_{12} (DMC-17)**	
*Fluoranthene *Pyrene *Benzo(a)anthracene *Chrysene	3,3'-Dichlorobenzidine *Benzo(b)fluoranthene *Benzo(k)fluoranthene *Benzo(a)pyrene *Indeno(1,2,3-cd)pyrene *Dibenzo(a,h)anthracene *Benzo(g,h,i)perylene	

*Included in optional Target Analyte List (TAL) of PAHs and PCP only.

Table 9. Semivolatile SIM DMCs and the Associated Target Analytes

Fluoranthene-d10 (DMC-1)	**2-Methylnaphthalene-d10 (DMC-2)**
Fluoranthene	Naphthalene
Pyrene	2-Methylnaphthalene
Benzo(a)anthracene	Acenaphthylene
Chrysene	Acenaphthene
Benzo(b)fluoranthene	Fluorene
Benzo(k)fluoranthene	Pentachlorophenol
Benzo(a)pyrene	Phenanthrene
Indeno(1,2,3-cd)pyrene	Anthracene
Dibenzo(a,h)anthracene	
Benzo(g,h,i)perylene	

All criteria were met _____
Criteria were not met
and/or see below ____X___

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

NOTES: Data for MS and MSDs will not be present unless requested by the Region. Notify the Contract Laboratory COR if a field or trip blank was used for the MS and MSD.

For a Matrix Spike that does not meet criteria, apply the action to only the field sample used to prepare the Matrix Spike sample. If it is clearly stated in the data validation materials that the samples were taken through incremental sampling or some other method guaranteeing the homogeneity of the sample group, then the entire sample group may be qualified.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:_____JC34340-1_____	Matrix/Level:_____Groundwater___
Sample ID:_____JC34340-2_(SIM)_____	Matrix/Level:_____Groundwater___
Sample ID:_____JC34340-8_____	Matrix/Level:_____Groundwater___
Sample ID:_____JC34280-5_(SIM)_____	Matrix/Level:_____Groundwater___
Sample ID:_____JC34064-7_____	Matrix/Level:_____Groundwater___
Sample ID:_____JC34340-16_____	Matrix/Level:_____Groundwater___
Sample ID:_____JC34340-16_(SIM)_____	Matrix/Level:_____Groundwater___
Sample ID:_____JC34180-1_(SIM)_____	Matrix/Level:_____Groundwater___

The QC reported here applies to the following samples: **Method:** SW846 8270D
JC34340-4, JC34340-7

Compound	JC34064-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
2,4-Dimethyl-phenol	ND		109	23.6	22* a	109	17.9	16* a	27* b	33-132/23
4-Chloroaniline	ND		109	ND	0* a	109	ND	0* a	nc	10-110/55
3,3'-Dichloro-benzidine	ND		217	ND	0* a	217	ND	0* a	nc	10-107/47
3-Nitroaniline	ND		109	11.8	11	109	8.6	8* a	31	10-110/50
4-Nitroaniline	ND		109	31.3	29* a	109	22.1	20* a	34* b	38-118/25

(a) Outside control limits due to matrix interference.
(b) Outside in-house control limits.
* - outside control limits

Note: No action taken. MS/MSD results apply to unspiked sample. Unspiked sample was from another job.

The QC reported here applies to the following samples: **Method:** SW846 8270D
JC34340-15, JC34340-16

Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1,4-Dioxane	1520 b		54.1	1580	0* a	51.3	1800	0* a	13	10-119/31

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.
* - outside control limits

Note: No action taken, outside control limits due to high level in sample relative to spike amount.

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM
JC34340-4, JC34340-7

Compound	JC34180-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
Benzo(a)anthracene	ND		2.04	4.74	232* b	2.04	5.20	255* b	9	25-135/33
Benzo(a)pyrene	ND		2.04	2.18	107	2.04	2.46	121* b	12	10-116/38
Benzo(b)fluoranthene	ND		2.04	2.23	109	2.04	3.39	166* b	41* c	10-131/40
Chrysene	ND		2.04	5.06	248* b	2.04	6.36	312* b	23	31-125/33
Naphthalene	ND		2.04	72.8	3567* b	2.04	100	4900* b	31	23-140/36

(b) Outside control limits due to matrix interference.
(c) Analytical precision exceeds in-house control limits.
* - outside control limits

Note: No action taken. MS/MSD results apply to unspiked sample. Unspiked sample was from another job.

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM
JC34340-15, JC34340-16

Compound	JC34340-16 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
Benzo(a)pyrene	ND		1.03	0.675	66	1.05	0.420	40	47* a	10-116/38
1,4-Dioxane	1670	EB	1.03	1240	0* b	1.05	1450	0* b	16	20-160/30

(a) Analytical precision exceeds in-house control limits.
(b) Outside control limits due to high level in sample relative to spike amount.
* = Outside of Control Limits.

Note: No qualification made base on RPD results, professional judgment. No action taken 1,4-dioxane MS/MSD % recoveries outside control limit due to high level in sample relative to spike amount.

Note: The acid standard was not added to sample JC34340-1MS/-1MSD. No action taken.

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).
If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).
If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met __X__
Criteria were not met
and/or see below _____

INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
Internal area meets the required criteria for batch samples corresponding to this data package.					

Action:

1. If an internal standard area count for a sample or blank is greater than 213.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration) (see Table 10 below):
   a. Qualify detects for compounds quantitated using that internal standard as estimated low (J-).
   b. Do not qualify non-detected associated compounds.
2. If an internal standard area count for a sample or blank is less than 20.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration):
   a. Qualify detects for compounds quantitated using that internal standard as estimated high (J+).
   b. Qualify non-detected associated compounds as unusable (R).
3. If an internal standard area count for a sample or blank is greater than or equal to 50.0%, and less than or equal to 213% of the area for the associated standard opening CCV or mid-point standard from initial calibration, no qualification of the data is necessary.
4. If an internal standard RT varies by more than 10.0 seconds: Examine the chromatographic profile for that sample to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Detects should not need to be qualified as unusable (R) if the mass spectral criteria are met.
5. If an internal standard RT varies by less than or equal to 10.0 seconds, no qualification of the data is necessary.

Note: Inform the Contract Laboratory Program Project Officer (CLP PO) if the internal standard performance criteria are grossly exceeded. Note in the Data Review Narrative potential effects on the data resulting from unacceptable internal standard performance.

State in the Data Review Narrative if the required internal standard compounds are not added to a sample or blank or if the required internal standard compound is not analyzed at the specified concentration.

Actions:

Table 10. Internal Standard Actions for Semivolatile Analysis

Criteria	Action	
	Detect	Non-detect
Area response < 20% of the opening CCV or mid-point standard CS3 from ICAL	J+	R
20% ≤ Area response < 50% of the opening CCV or mid-point standard CS3 from ICAL	J+	UJ
50% ≤ Area response ≤ 200% of the opening CCV or mid-point standard CS3 from ICAL	No qualification	No qualification
Area response > 200% of the opening CCV or mid-point standard CS3 from ICAL	J-	No qualification
RT shift between sample/blank and opening CCV or mid-point standard CS3 from ICAL > 10.0 seconds	R	R
RT shift between sample/blank and opening CCV or mid-point standard CS3 from ICAL < 10.0 seconds	No qualification	No qualification

All criteria were met __X__
Criteria were not met
and/or see below _____

TARGET COMPOUND IDENTIFICATION

Criteria:

Is the Relative Retention Times (RRTs) of reported compounds within ±0.06 RRT units of the standard RRT [opening Continuing Calibration Verification (CCV) or mid-point standard from the initial calibration]. **Yes?** or No?

List compounds not meeting the criteria described above:

Sample ID	Compounds	Actions
_____	_____	_____
_____	_____	_____
_____	_____	_____

Mass spectra of the sample compound and a current laboratory-generated standard [i.e., the mass spectrum from the associated calibration standard (opening CCV or mid-point standard from initial calibration)] must match according to the following criteria:

a. All ions present in the standard mass spectrum at a relative intensity greater than 10% must be present in the sample spectrum.

b. The relative intensities of these ions must agree within ±20% between the standard and sample spectra (e.g., for an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30-70%).

c. Ions present at greater than 10% in the sample mass spectrum, but not present in the standard spectrum, must be evaluated by a reviewer experienced in mass spectral interpretation.

List compounds not meeting the criteria described above:

Sample ID	Compounds	Actions
_____	_____	_____
_Identified_compounds_meet_the_required_criteria____		_____
_____	_____	_____

Action:

1. The application of qualitative criteria for GC/MS analysis of target compounds requires professional judgment. It is up to the reviewer's discretion to obtain additional information from the laboratory. If it is determined that incorrect identifications were made, qualify all such data as unusable (R).

2. Use professional judgment to qualify the data if it is determined that cross-contamination has occurred.

3. Note in the Data Review Narrative any changes made to the reported compounds or concerns regarding target compound identifications. Note, for Contract Laboratory COR action, the necessity for numerous or significant changes.

TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

NOTE: Tentatively identified compounds should only be evaluated when requested by a party from outside of the Hazardous Waste Support Section (HWSS).

List TICs

Sample ID	Compound	Sample ID	Compound

Action:

1. Qualify all TIC results for which there is presumptive evidence of a match (e.g. greater than or equal to 85% match) as tentatively identified (NJ), with approximated concentrations. TICs labeled "unknown" are qualified as estimated (J).
2. General actions related to the review of TIC results are as follows:
   a. If it is determined that a tentative identification of a non-target compound is unacceptable, change the tentative identification to "unknown" or another appropriate identification, and qualify the result as estimated (J).
   b. If all contractually-required peaks were not library searched and quantitated, the Region's designated representative may request these data from the laboratory.
3. In deciding whether a library search result for a TIC represents a reasonable identification, use professional judgment. If there is more than one possible match, report the result as "either compound X or compound Y". If there is a lack of isomer specificity, change the TIC result to a nonspecific isomer result (e.g., 1,3,5-trimethyl benzene to trimethyl benzene isomer) or to a compound class (e.g., 2-methyl, 3-ethyl benzene to a substituted aromatic compound).
4. The reviewer may elect to report all similar compounds as a total (e.g., all alkanes may be summarized and reported as total hydrocarbons).

5. Target compounds from other fractions and suspected laboratory contaminants should be marked as "non-reportable".
6. Other Case factors may influence TIC judgments. If a sample TIC match is poor, but other samples have a TIC with a valid library match, similar RRT, and the same ions, infer identification information from the other sample TIC results.
7. Note in the Data Review Narrative any changes made to the reported data or any concerns regarding TIC identifications.
8. Note, for Contract Laboratory COR action, failure to properly evaluate and report TICs

All criteria were met __X__
Criteria were not met
and/or see below _____

SAMPLE QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

Action:

1. When a sample is analyzed at more than one dilution, the lower CRQL are used unless a QC exceedance dictates the use of higher CRQLs from the diluted sample. Samples reported with an "E" qualifier should be reported from the diluted sample.
2. If any discrepancies are found, the Region's designated representative may contact the laboratory to obtain additional information that could resolve any differences. If a discrepancy remains unresolved, the reviewer must use professional judgment to decide which value is the most accurate. Under these circumstances, the reviewer may determine that qualification of data is warranted. Note in the Data Review Narrative a description of the reasons for data qualification and the qualification that is applied to the data.
3. For non-aqueous samples, if the solids is less than 10.0%, use professional judgment for both detects and non-detects. If the percent solid for a soil sample is greater than or equal to 10.0% and less than 30.0%, use professional judgment to qualify detects and non-detects. If the percent solid for a soil sample is greater than or equal to 30.0%, detects and non-detects should not be qualified (see Table 11).
4. Note, for Contract Laboratory COR action, numerous or significant failures to accurately quantify the target compounds or to properly evaluate and adjust CRQLs.
5. Results between MDL and CRQL should be qualified as estimated "J".
6. Results < MDL should be reported at the CRQL and qualified "U". MDLs themselves should not be reported.

Table 11. Percent Solids Actions for Semivolatile Analysis for Non-Aqueous Samples

Criteria	Action	
	Detects	Non-detects
%Solids < 10.0%	Use professional judgment	Use professional judgment
10.0% ≤ %Solids ≤ 30.0%	Use professional judgment	Use professional judgment
%Solids > 30.0%	No qualification	No qualification

SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

Sample ID:__ JC34340-1__(SIM)__ Analyte:__1,4-dioxane __ RF:_0.175_

[ ] = (23472)(4.0)/(202526)(0.175)
= 2.65 ppm Ok

QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
JC34340-7	2 x	1,4-dioxane outside calibration range
JC34340-8	5 x	1,4-dioxane outside calibration range
JC34340-16	50 x	1,4-dioxane outside calibration range

All criteria were met _____
Criteria were not met
and/or see below ___X___

FIELD DUPLICATE PRECISION

Sample IDs:____JC34340-7/-8_____ Matrix:___Groundwater_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: if large RPD (> 50 %) is observed, confirm identification of the samples and note differences. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL ug/L	SAMPLE CONC. (ug/l)	DUPLICATE CONC. (ug/l)	RPD	ACTION
1,4-dioxane	3.6	105	220	71 %	Results qualified as estimated (J) in affected samples
Field duplicate analyzed as part of this data package. RPD within the required guidance document criteria < 50 % for detected target analytes above 5 SQL except for the cases described in this document.					

All criteria were met __X__
Criteria were not met
and/or see below ____

OTHER ISSUES

A. System Performance

List samples qualified based on the degradation of system performance during simple analysis:

Sample ID	Comments	Actions

Action:

Use professional judgment to qualify the data if it is determined that system performance has degraded during sample analyses. Inform the Contract Laboratory Program COR any action as a result of degradation of system performance which significantly affected the data.

B. Overall Assessment of Data

List samples qualified based on other issues:

Sample ID	Comments	Actions

_No_other_issues_that_required_the_need_to_qualify_the_data._Results_are_valid_and_can_be_used_for_decission_purposes._Other_discrepancies_are_shown_below._____

Note: The acid surrogate standard not added to the LCS analyzed on 12/28/16. The affected samples either was not re-extracted because no sample was left or extracted outside the method recommended holding time. No action taken, professional judgment.

Action:

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
2. Write a brief narrative to give the user an indication of the analytical limitations of the data. Inform the Contract Laboratory COR the action, any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of

the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).

3. Sometimes, due to dilutions, re-analysis or SIM/Scan runs are being performed, there will be multiple results for a single analyte from a single sample. The following criteria and professional judgment are used to determine which result should be reported:
    - The analysis with the lower CRQL
    - The analysis with the better QC results
    - The analysis with the higher results

EXECUTIVE NARRATIVE

SDG No:	**JC34340**	Laboratory:	**Accutest, New Jersey**
Analysis:	**SW846-8015C**	Number of Samples:	**14**
Location:	BMSMC, Building 5 Area Humacao, PR		

SUMMARY: Fourteen (14) samples were analyzed for the low molecular weight alcohols (LMWAs) list following method SW846-8015C. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues:	**None**
Major:	**None**
Minor:	**None**

Critical findings:	**None**
Major findings:	**None**
Minor findings:	**None**

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888

Rafael Infante

Signature:
Date: January 28, 2017

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC34340-1
Sample location: BMSMC Building 5 Area
Sampling date: 12/20/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-2
Sample location: BMSMC Building 5 Area
Sampling date: 12/20/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-3
Sample location: BMSMC Building 5 Area
Sampling date: 12/20/2016
Matrix: AQ - Field Blank Water

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-4
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: AQ - Equipment Blank

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-7
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-8
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-9
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-10
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-11
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-12
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: AQ - Field Blank Water

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-15
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: AQ - Equipment Blank

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-16
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC34340-16MS
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	4400	ug/l	1.0	-	-	Yes
Isobutyl Alcohol	4800	ug/l	1.0	-	-	Yes
Isopropyl Alcohol	4430	ug/l	1.0	-	-	Yes
n-Propyl Alcohol	4690	ug/l	1.0	-	-	Yes
n-Butyl Alcohol	4230	ug/l	1.0	-	-	Yes
sec-Butyl Alcohol	5370	ug/l	1.0	-	-	Yes
Methanol	4110	ug/l	1.0	-	-	Yes

Sample ID: JC34340-16MSD
Sample location: BMSMC Building 5 Area
Sampling date: 12/22/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	5180	ug/l	1.0	-	-	Yes
Isobutyl Alcohol	5110	ug/l	1.0	-	-	Yes
Isopropyl Alcohol	4700	ug/l	1.0	-	-	Yes
n-Propyl Alcohol	5200	ug/l	1.0	-	-	Yes
n-Butyl Alcohol	4530	ug/l	1.0	-	-	Yes
sec-Butyl Alcohol	5700	ug/l	1.0	-	-	Yes
Methanol	4670	ug/l	1.0	-	-	Yes

DATA REVIEW WORKSHEETS

Project Number:___JC34340_____
Date:_____12/20-22/2016_____
Shipping Date:____12/22/2016_____
EPA Region:_____2_____

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _Accutest_____ data package received has been reviewed and the quality control and performance data summarized. The modified data review for VOCs included:

Lab. Project/SDG No.: __JC34340_____ Sample matrix: ____Groundwater_____
No. of Samples: _____14_____

Trip blank No.: _____-_____
Field blank No.: _____JC34340-3;_JC34340-12_____
Equipment blank No.:___JC34340-4;_JC34340-15_____
Field duplicate No.:_____JC34340-7/JC34340-8_____

___X___ Data Completeness
___X___ Holding Times
___N/A_ GC/MS Tuning
___N/A_ Internal Standard Performance
___X___ Blanks
___X___ Surrogate Recoveries
___X___ Matrix Spike/Matrix Spike Duplicate
___X___ Laboratory Control Spikes
___X___ Field Duplicates
___X___ Calibrations
___X___ Compound Identifications
___X___ Compound Quantitation
___X___ Quantitation Limits

Overall Comments:_Low_molecular_weight_alcohols_by_SW-846_8015C._____
_____
_____

Definition of Qualifiers:
J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____
Date:__January_28,_2017_____

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were met __X__
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
All samples analyzed within the recommended method holding. All samples properly preserved.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH $\leq$ 2, 4°C), no air bubbles.
Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.
Soil samples- 7 days from sample collection.
Cooler temperature (Criteria: 4 $\pm$ 2 °C): 5.4°C

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).
If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)
If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).
If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).
If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).
If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).
If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were met __N/A__
Criteria were not met see below ____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

__N/A_ The BFB performance results were reviewed and found to be within the specified criteria.

__N/A_ BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

All criteria were met __X__
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____10/10/16_____
Dates of continuing calibration:_____12/29/16;_12/30/16_____
Dates of final calibration verification:___10/10/10;_12/29/16;_12/30/16_____
Instrument ID number:_____GCGH_____
Matrix/Level:_____Aqueous/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Note: Initial, continuing, and final calibration verifications meets method specific criteria in at least one of the two columns. Final calibration verification included in data packages.

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.
All %RSD must be ≤ 15 % regardless of method requirements for CCC.
All %Ds must be ≤ 20% regardless of method requirements for CCC.
It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.
If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.
If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).
If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met __X__
Criteria were not met
and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
All_method_blank_meeth_method_specific_criteria				

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

_No_target_analytes_detected_in_the_field/equipment_blanks_analyzed_with_this_data_package._____
_No_trip_blank_analyzed_with_this_data_package._____

All criteria were met __X__
Criteria were not met
and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)
ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and ≤ AL, report the compound as not detected (U) at the SQL.
If the concentration is ≥ SQL but ≤ AL, report the compound as not detected (U) at the reported concentration.
If the concentration is ≥ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately
Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met ___X___
Criteria were not met
and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.
List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.
Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND				ACTION
	Hexanol	~~DBFM~~	~~TOL-d8~~	~~BFB~~	
	S1 a	S1 b			
JC34340-1	102	85			
JC34340-2	97	79			
JC34340-3	103	87			
JC34340-4	100	85			
JC34340-7	84	79			
JC34340-8	66	61			
JC34340-9	76	73			
JC34340-10	85	82			
JC34340-11	82	81			
JC34340-12	99	81			
JC34340-15	91	88			
JC34340-16	89	85			
GGH5599-BS	98	98			
GGH5599-MB2	87	90			
GGH5600-BS	94	97			
GGH5600-MB2	78	84			
JC34212-5MS	86	68			
JC34212-5MSD	82	85			
JC34340-16MS	88	85			
JC34340-16MSD	87	88			
GGH5599-MB1	86	87			

(a) Recovery from GC signal #2 (b) Recovery from GC signal #1

Note: All surrogate recoveries within laboratory control limits.

QC Limits* (Aqueous)
_____LL_to_UL___ _56_to_145_ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Low)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Med)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____

1,2-DCA = 1,2-Dichloromethane-d4
DBFM = Dibromofluoromethane
TOL-d8 = Toluene-d8
BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.
If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met __X___
Criteria were not met
and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:__JC34212-5MS/-5MSD_____ Matrix/Level:____Groundwater/low_____
Sample ID:__JC34340-16MS/-16MSD_____ Matrix/Level:____Groundwater/low_____

MS OR MSD COMPOUND % R RPD QC LIMITS ACTION

MS/MSD%_recoveries_and_RPD_within_laboratory_control_limits._____

Note:

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All criteria were met __X__
Criteria were not met
and/or see below _____

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).
If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).
If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:_____-_____ Matrix/Level/Unit:_____-_____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

A separate worksheet should be used for each MS/MSD pair.

All criteria were met __X__
Criteria were not met
and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? **Yes** or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID COMPOUND % R QC LIMIT

___Recoveries_within_laboratory_control_limits._____
_____
_____
_____

Note:

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).
If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met ____X____
Criteria were not met
and/or see below _____

IX. FIELD/LABORATORY DUPLICATE PRECISION

Sample IDs:__JC34340-7/JC34340-8___ Matrix:___Groundwater____

Field/laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD ± 30% for aqueous samples, RPD ± 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Field duplicates analyzed with this data package. RPD within laboratory, generally acceptable and guidance document performance criteria control limits.					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met __N/A___
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

* Area of +100% or -50% of the IS area in the associated calibration standard.
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met __X__
Criteria were not met
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JC34340-16MS

n-propyl alcohol RF = 25.71

[ ] = (143046)/(25.71)

= 5,564 ppm OK

All criteria were met __X__
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

B. Percent Solids

List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

MEMORANDUM

TO: Mr. Haley Royer
Anderson, Mulholland and Associates

DATE: January 26, 2017

FROM: R. Infante

FILE: JC34340

RE: Data Validation
SDG: JC34340

SUMMARY

Full validation was performed on the data for two groundwater samples analyzed for dissolved methane by method RSK-175. The samples were collected at the Bristol Myer Squib-Building 5 Area, Humacao, PR site on December 20-21, 2016 and submitted to Accutest Laboratories of Dayton, New Jersey that analyzed and reported the results under delivery groups (SDG) JC34340. The sample results were assessed according to USEPA general data validation guidance documents.

In general the data is valid as reported and may be used for decision making purposes. The data results are acceptable for use.

SAMPLES

The samples included in the review are listed below

Client Sample ID	Lab. Sample ID	Collected Date	Matrix	Analysis
MW-18	JC34340-2	12/20/16	Groundwater	Methane
BR-2	JC34340-9	12/21/16	Groundwater	Methane

REVIEW ELEMENTS

Sample data were reviewed for the following parameters, where applicable to the method

- Agreement of analysis conducted with chain of custody (COC) form
- Holding time and sample preservation
- Gas chromatography/mass spectrometry (GC/MS) tunes
- Initial and continuing calibrations
- Method blanks/trip blanks/field blank
- Canister cleaning certification criteria
- Surrogate spike recovery
- Internal standard performance and retention times
- Field duplicate results
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Quantitation limits and sample results

DISCUSSION

Agreement of Analysis Conducted with COC Request

Sample reports corresponded to the analytical request designated on the chain-of-custody.

Holding Times and Sample Preservation
Sample preservation was acceptable.

Samples analyzed within method recommended holding time.

Initial and Continuing Calibrations
Initial and continuing calibrations meet method specific requirements. Initial calibration retention times meet method specific requirements.

Method Blank/Trip Blank/Field Blank
Target analytes were not detected in laboratory method blanks.

No trip/field/equipment blank analyzed with this data package.

Laboratory/Field Duplicate Results
Field duplicates were analyzed as part of this data set. Target analytes meet the RPD performance criteria of + 25 % for analytes 5 x SQL.

- JC34212-13/-13DUP - 21 % RPD outside the in house control limits (±14%). No action taken, duplicate RPD apply to the sample and its duplicate. Sample and its duplicate from another job. RPD within generally acceptable control limts.

LCS/LCSD Results
LCS (blank spike) was analyzed by the laboratory associated with this data package. Recoveries and RPD within laboratory control limits.

Quantitation Limits and Sample Results

Dilutions were not performed.

Calculations were spot checked.

Summary

Samples JC34340-2 and JC34340-9 were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document.

Rafael Infante
Chemist License 1888

SAMPLE METHANE DATA SAMPLE SUMMARY

Sample ID: JC34340-2
Sample location: BMSMC Building 5 Area
Sampling date: 20-Dec-16
Matrix: Groundwater

METHOD: RSK -175

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Methane	0.48	ug/l	100	-	-	Yes

Sample ID: JC34340-9
Sample location: BMSMC Building 5 Area
Sampling date: 21-Dec-16
Matrix: Groundwater

METHOD: RSK-175

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Methane	4.0	ug/l	20	-	-	Yes

MEMORANDUM

TO: Mr. Haley Royer
Anderson, Mulholland and Associates

DATE: January 28, 2017

FROM: R. Infante

FILE: JC34340

RE: Data Validation
BMSMC, Building 5 Area
SM04.00.06/
Accutest Job Numbers: JC34340

SUMMARY

Full validation was performed on the data for two (2) groundwater samples analyzed selected inorganics (iron – ferric and ferrous; nitate-nitrogen; nitrite-nitrogen; nitrate + nitrite – nitrogen; sulfate and sulfide). The methods employed are listed in Table 1. The samples were collected at the BMSMC, Building 5 Area, Humaco, PR site on December 20-21, 2016 and submitted to Accutest Laboratories of Dayton, New Jersey that analyzed and reported the results under delivery groups (SDG) JC34340.

Table 1.

ANALYTE	METHOD	ANALYTE	METHOD
Iron, ferric[a]	SM3500FE B-11	Iron, ferrous[b]	SM3500FE B-11
Nitrogen, nitrate[c]	EPA353.2/SM4500NO2B	Nitrogen, nitrate + nitrite	EPA352.2/LACHAT
Nitrogen, nitrite	SM4500NO2 B-11	Sulfate	EPA 300/SW846-9056A
Sulfide	SM4500S2-F-11		

(a) Calculated as: (Iron) - (Iron, Ferrous)
(b) Field analysis required. Received out of hold time and analyzed by request.
(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: *USEPA Contract Laboratory program National Functional Guidelines for Inorganic data Review (OSWER 9240.1-45, EPA 540-R-04-004, October 2004- Final),* (noted herein as the "primary guidance document"). Also, QC criteria from *"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update IV, December 1998),"* and the QC requirements for the methods performed following the Standard Method guidelines are utilized. The guidelines were modified to accommodate the non-CLP methodology. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

In general the data are valid as reported and may be used for decision making purposes. The data results are acceptable for use; some of the results were qualified. Results for ferrous and ferric iron were qualified as estimated (J) in samples: JC34340-2; and -9. Results for Nitrate + Nitrite Nitrogen qualified as estimated (J) in samples: JC34340-1. Results for Nitrite qualified as estimated (J or UJ) in samples JC34340-2 and -9. Results for Nitrate are qualified as estimated (J or UJ) in samples JC34340-2 and -9.

SAMPLES

The samples included in the review are listed below

FIELD SAMPLE ID	LABORATORY ID	ANALYSIS
MW-18	JC34340-2	See Table 1
BR-2	JC34340-9	See Table 1

REVIEW ELEMENTS

Sample data were reviewed for the following parameters, where applicable to the method

- Agreement of analysis conducted with chain of custody (COC) form
- Holding time and sample preservation
- Initial and continuing calibrations
- Method blanks/trip blanks/field blank
- Surrogate spike recovery
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Internal standard performance
- Field duplicate results
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Quantitation limits and sample results

DISCUSSION

Agreement of Analysis Conducted with COC Request
Sample reports corresponded to the analytical request designated on the chain-of-custody form.

Holding Times and Sample Preservation
The cooler temperatures were within the QC acceptance criteria of 4°C ± 2°C.

Sample preservation was acceptable.

Samples analyzed within method recommended holding time except for the following:

- JC34340-2 for Iron, Ferrous: Field analysis required. Received out of hold time and analyzed by request.
- JC34340-9 for Iron, Ferrous: Field analysis required. Received out of hold time and analyzed by request.
- Nitrite analysis done past holding time. The samples were received and analyzed out of holding time.

Note: Results for ferrous and ferric iron qualified as estimated (J). Results for are Nitrite qualified as estimated (J). Results for Nitrate are qualified as estimated (J or UJ) in samples JC34340-2 and -9.

Initial and Continuing Calibrations
Initial and continuing calibration meets method performance criteria.

Method Blank/Equipment Blank/Field Blank
Target analytes were not detected in laboratory method blanks above the reporting limit.

No field/equipment blanks analyzed as part of this data package.

MS/MSD
Matrix spike was performed. Recoveries for MS/MSD were within laboratory control limits; RPD for MS/MSD were within control limits.

Field/Laboratory Duplicate Results
Field/laboratory duplicate were analyzed as part of this data set. When no field/laboratory duplicates were analyzed, MS/MSD RPD was used to assess precision. RPD results were within laboratory/recommended control limits except for the following:

- Iron, Ferrous JC34340-2 - 23.3 % RPD; control limit ± 20%. No action taken, low sample and duplicate concentration; < 5 x IDL.
- Nitrogen, Nitrate + Nitrite JC34362-1 - 72.7 % RPD; control limit ± 22%. No action taken, low sample and duplicate concentration; < 5 x IDL. QC sample from another job.

LCS/LCSD Results
The laboratory analyzed one LCS (blank spike) associated with each matrix from this data set. The % recoveries of all spiked analytes were within the laboratory QC acceptance limits.

Quantitation Limits and Sample Results

Dilutions were not required with this data set.

Calculations were spot checked.

Summary

The following samples JC34340-2 and JC34340-9 were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. Some of the results were qualified, the results are valid.

Rafael Infante
Chemist License 1888

SAMPLE INORGANIC DATA SAMPLE SUMMARY

Sample ID: JC34340-2
Sample location: BMSMC Building 5 Area
Sampling date: 12/20/2016
Matrix: Groundwater

Analyte Name	Method	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Fe	SW846-6010C	2130	ug/l	1.0	-	-	Yes
Mn	SW846-6010C	75	ug/l	1.0	-	-	Yes
Alkalinity, Total as CaCO3	SM2320 B-11	207	mg/l	1.0	-	-	Yes
Iron, ferric	SM3500FE B-11	2.0	mg/l	1.0	-	J	Yes
Iron, ferrous	SM3500FE B-11	< 0.20	mg/l	1.0	-	J	Yes
Nitrogen, nitrate	EPA 353.2/SM4500NO2B	0.58	mg/l	1.0	-	J	Yes
Nitrogen, nitrate + nitrite	EPA 353.2/LACHAT	0.59	mg/l	1.0	-	-	Yes
Nitrogen, nitrite	SM4500NO2 B-11	0.015	mg/l	1.0	-	J	Yes
Sulfate	EPA 300/SW846 9056A	< 10	mg/l	1.0	-	U	Yes
Sulfide	SM4500S2- F-11	< 2.0	mg/l	1.0	-	U	Yes

Sample ID: JC34340-9
Sample location: BMSMC Building 5 Area
Sampling date: 12/21/2016
Matrix: Groundwater

Analyte Name	Method	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Fe	SW846-6010C	3320	ug/l	1.0	-	-	Yes
Mn	SW846-6010C	166	ug/l	1.0	-	-	Yes
Alkalinity, Total as CaCO3	SM2320 B-11	289	mg/l	1.0	-	-	Yes
Iron, ferric	SM3500FE B-11	3.3	mg/l	1.0	-	J	Yes
Iron, ferrous	SM3500FE B-11	<0.20	mg/l	1.0	-	J	Yes
Nitrogen, nitrate	EPA 353.2/SM4500NO2B	<0.11	mg/l	1.0	-	J	Yes
Nitrogen, nitrate + nitrite	EPA 353.2/LACHAT	<0.10	mg/l	1.0	-	-	Yes
Nitrogen, nitrite	SM4500NO2 B-11	< 0.010	mg/l	1.0	-	UJ	Yes
Sulfate	EPA 300/SW846 9056A	38.6	mg/l	1.0	-	-	Yes
Sulfide	SM4500S2- F-11	< 2.0	mg/l	1.0	-	U	Yes

DATA REVIEW WORKSHEETS

Type of validation Full:___X_____ Project Number:____JC34340_____
Limited:_____ Date:_____12/20-21/2016_____
EPA Region:__2__ Date shipped:___12/22/16_____

REVIEW OF INORGANIC ANALYSIS DATA PACKAGE

The following guidelines for evaluating metals analyses (6010C/6020/7000A series method) sulfide, and/or cyanide were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: *Hazardous Waste Support Section SOP N0. HW-3b Revision 0 (July 2015) ISM02 ICP-MS Data Validation; USEPA Contract Laboratory program National Functional Guidelines for Inorganic data Review (OSWER 9240.1-45, EPA 540-R-04-004, October 2004- Final). Validation of Metal for the Contract Laboratory Program (CLP) (SOP HW-2, Revision 13. Based on ILM05.3 (August 2009).* Quality control validation criteria were derived from *"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update IV, 1998)".* The project QAPP is reviewed for project specific information (if available). The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _Accutest_____ data package received has been reviewed and the quality control and performance data summarized. The data review for inorganic included:

Lab. Project/SDG No.: ____JC34340_____ Sample matrix: _____Groundwater____
No. of Samples: _____2_____
Field blank No.: _____-_____
Equipment blank No.: _____-_____
Field duplicate No.: _____-_____

___X___ Data deliverables
___X___ Holding Times
___X___ Calibrations
___X___ Blanks
___X___ ICP Interference Check Results
___X___ Matrix Spike/Matrix Spike Duplicate
___X___ Laboratory Duplicates
___X___ Field Duplicates
___X___ Laboratory Control Samples
___X___ ICP Serial Dilution Results
___X___ Detection Limits Results
___X___ Sample Quantitation

Overall Comments: _Fe_and_Mn_(SW846-6010C)_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated non-detect
E- Laboratory qualifier

Reviewer:____ Rafael Infante _____ Date:__01/28/2017_____

All criteria were met __X____
Criteria were not met
and/or see below _____

I. DATA DELIVERABLES

A. Data Package:

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

B. Other Discrepancies:

All criteria were met __X___
Criteria were not met
and/or see below _____

HOLDING TIMES
The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of preparation, and subsequently from the time of preparation to the time of analysis.

Complete table for all samples and circle the analysis date for samples not within criteria

SAMPLE ID	DATE SAMPLED	CYANIDE DATE ANALYSIS	Hg DATE ANALYSIS	OTHERS DATE ANALYSIS	pH	SULFIDE	ACTION
SAMPLES DIGESTED AND ANALYZED WITHIN THE METHOD RECOMMENDED HOLDING							

Criteria

Metals – 180 days from time of collection.
Mercury – 28 days from time of collection.
Hexavalent Chromium (solids)- 30/7 from day of collection; 48 hrs aqueous samples
Cyanide – 14 days from time of collection
Sulfide - 14 days from time of collection
pH measurements of aqueous samples upon receipt at the laboratory (criteria pH $\leq$ 2 for metals; pH $\geq$ 12 for cyanide)

Actions: Qualify positive results/nondetects as follows:

If holding times are exceeded, estimate positive results (J) and rejects nondetects (R).
If pH > 2 for metals or pH < 12 for cyanide, positive results (J) and nondetects (UJ).
Cooler Temperature (Criteria: 4°C + 2°C):___5.4°C_____.
If cooler temperature is > 10°C, flag non-detects as (UJ) and detects as (J).

All criteria were met __N/A___
Criteria were not met
and/or see below _____

ICP-MS TUNE ANALYSIS

Is the ICP-MS tuned prior to calibration? Yes or No?

Does the % RSD exceeds 5% for any isotope in the tuning solution? Yes or No?

Action:

NOTES: For ICP-MS tunes that do not meet the technical criteria, apply the action to all samples reported from the analytical run.

1. If the ICP-MS instrument was not tuned prior to calibration, the sample data should be qualified as unusable (R).

2. If the tuning solution was not analyzed or scanned at least 5x consecutively or the tuning solution does not contain the required analytes spanning the analytical range, the reviewer should use professional judgment to determine if the associated sample data should be qualified. The reviewer may need to obtain additional information from the laboratory. The situation should be recorded in the Data Review Narrative and noted for Contract Laboratory Program Project Officer (CLP PO) action.

3. If the resolution of the mass calibration is not within 0.1 u for any isotope in the tuning solution, qualify all analyte results that are ≥ Method Detection Limit (MDL) associated with that isotope as estimated (J), and all non-detects associated with that isotope as estimated (UJ). The situation should be recorded in the Data Review Narrative and noted for CLP PO action.

4. If the %RSD exceeds 5% for any isotope in the tuning solution, qualify all sample results that are ≥ MDL associated with that tune as estimated (J), and all non-detects associated with that tune as estimated (UJ). The situation should be recorded in the Data Review Narrative and noted for CLP PO action.

Table 2. ICP-MS Tune Actions for ICP-MS Analysis

ICP-MS Tune Results	Action for Samples
Tune not performed	Qualify all results as unusable (R)
Tune not performed properly	Use professional judgment
Resolution of mass calibration not within 0.1u	Qualify results that are ≥ MDL as estimated (J) Qualify non-detects as estimated (UJ)
% RSD > 5%	Qualify results that are ≥ MDL as estimated (J) Qualify non-detects as estimated (UJ)

Note: Analytes (As) analyzed by SW846-6010 – no tuning necessary.

All criteria were met __X___
Criteria were not met
and/or see below _____

INSTRUMENT CALIBRATION (SECTION 1)

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data. Minimum of 2 calibration points for ICP-AES and ICP-MS; 5 points for Hg; and 4 points for cyanide. One initial calibration standard at the CRQL level for cyanide and Hg. If no, write in the non-compliance section of the data review narrative.

List the analytes which did not meet the percent recovery (%R) criteria for Initial or Continuing Calibration Verification standards (ICV or CCV).

Acceptance Criteria	ICV %R	CCV %R
Metals by 6010C/6020	100 + 10%	100 + 10%
Mercury/Metals by 7000s	100 + 10%	100 + 20%
Cyanide	100 + 15%	100 + 15%
Sulfide	100 + 15%	100 + 15%

DATE	ICV/CCV#	ANALYTE	%R	ACTION	SAMPLES AFFECTED
INITIAL AND CONTINUING CALIBRATION MEET METHOD SPECIFIC CRITERIA					

ACTIONS: If any analyte does not meet the %R criteria, follow the actions stated below. Qualify five samples on either side of the ICV/CCV out of control limit.

Estimate positive results (J) if:	ICV	CCV
Metals by 6010C/6020	111 – 125%	111 – 125%
Mercury/Metals by 7000s	111 – 125%	111 – 135%
Cyanide	116 – 130%	116 – 130%
Sulfide	116 – 130%	116 – 130%
Estimate positive results and nondetects (U/UJ) if:		
Metals by 6010C/6020	75 – 89%	75 – 89%
Mercury/Metals by 7000s	75 – 89%	65 – 79%
Cyanide	70 – 84%	70 – 84%
Sulfide	70 – 84%	70 – 84%
Reject positive results and nondetects (R) if:		
Metals by 6010C/6020	<75%, >125%	<75%, >125%
Mercury/Metals by 7000s	<75%, >125%	<65%, >135%
Cyanide	<70%, >130%	<70%, >130%
Sulfide	<70%, >130%	<70%, >130%

All criteria were met __X___
Criteria were not met
and/or see below _____

III. INSTRUMENT CALIBRATIONS (SECTIONS 2 & 3)

2. Analytical Sequence

Did the laboratory use the proper number of standards for calibration as described in the method? **Yes** or No

B. Were calibrations performed at the beginning of each analysis? **Yes** or No

Were calibration verification standards analyzed at the beginning of sample analysis and the proper frequency according to the method? **Yes** or No

D. Where the AA correlation coefficients (r) for the calibration curves $\geq$ 0.995? If r < 0.995, estimate positive results and nondetects (J/UJ). It is not necessary to qualify results if the laboratory used order regression. **Yes** or No

Data quality may be affected if any of the above answer are "no". Use professional judgment to determine the severity of the effect and qualify the data accordingly. Discuss any actions below and list the sample affected.

_____

_____

3. Other Check Standards

Laboratories may analyze an additional check standard after establishing the calibration curve. This standard may contain low level concentrations of target analytes and be analyzed and evaluated by the laboratory similar to a CLP "CRLD" standard (CRI for ICP, CRA for AA, and/or mid-range standard for CN and Sulfide). A 100 $\pm$ 20% recovery acceptance limit should be used by the validator to evaluate the standard.

ACTIONS: If any analyte does not meet the %R criteria, follow the action needed below. Qualify 50% of either side of the CRI/CRA out of control limits.

% R	%R < 50%	%R = 50-79%	%R = 121-150%	%R > 150%	Affected Range
Qualify Positive/Nondetects Results					
Metals by 6010C/6020	R/R	J/UJ	J/A	R/A	<2x CRI conc.
Hg/metals by 7000s	R/R	J/UJ	J/A	R/A	<1.5x CRI conc.
Cyanide	R/R	J/UJ	J/A	R/A	<1.5x mid std. conc.
Sulfide	R/R	J/UJ	J/A	R/A	<1.5x mid std. conc.

CRI is not required for Al, Ba, Ca, Fe, Mg, Na, and K.

NOTE: CRLD standard within laboratory and method specific criteria.

All criteria were met __N/A___
Criteria were not met
and/or see below _____

Table 4. Calibration Actions for ICP-MS Analysis

Calibration Result	Action for Samples
Calibration not performed	Qualify all results as unusable (R)
Calibration incomplete	Use professional judgment Qualify results that are ≥ MDL as estimated (J) Qualify non-detects as estimated (UJ)
Not at least one calibration standard at or below the CRQL for each analyte	Qualify results that are ≥ MDL but < 2x the CRQL as estimated (J) Qualify non-detects as estimated (UJ)
Correlation coefficient < 0.995; %D outside ±30%; y-intercept ≥ CRQL	Qualify results that are ≥ MDL as estimated (J) Qualify non-detects as estimated (UJ)
Correlation coefficient < 0.990	Qualify results that are ≥ MDL as estimated (J) Qualify non-detects as unusable (R)
ICV/CCV %R < 75%	Qualify results that are ≥ MDL as unusable (R) Qualify all non-detects as unusable (R)
ICV/CCV %R 75-89%	Qualify results that are ≥ MDL as estimated low (J-) Qualify non-detects as estimated (UJ)
ICV/CCV %R 111-125%	Qualify results that are ≥ MDL as estimated high (J+)
ICV/CCV %R > 125%	Qualify results that are ≥ MDL as estimated high (J+)
ICV/CCV %R > 160%	Qualify results that are ≥ MDL as unusable (R)

All criteria were met __X___
Criteria were not met
and/or see below _____

IV. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including equipment, field, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in Sections 1 & 2 below. A separate worksheet page should be used for soil and water blanks.

Laboratory blanks Matrix:___Aqueous_____

DATE ANALYZED	ICB/CCB#	PREP BLK	ANALYTE	CONCENTRATION UNITS
_____	_____	_____	_____	_____
__No_analyte_detected_in_method_blanks_above_reporting_limits._____				

Field/Equipment Matrix:___Aqueous_____

DATE ANALYZED	EQUIPMENT/FIELD BLANK	ANALYTE	CONCENTRATION UNITS
__No_field/equipment_blank_analyzed_as_part_of_this_data_package._____			

Table. Field/Rinsate/Trip Blank Actions for ICP-MS Analysis

Blank Result	Sample Result	Action for Samples
> CRQL	≥ MDL but ≤ CRQL	Report CRQL value with a "U"
	> CRQL but < Blank Result	Report at level of Blank Result with a "U"
	> Blank Result but < 10x the Blank Result	Use professional judgment to qualify results as estimated (J)

All criteria were met __X___
Criteria were not met
and/or see below _____

IV. BLANK ANALYSIS RESULTS (Section 3)

Frequency requirements

Was the preparation blank analyzed for each matrix,
at the frequency of the method? **Yes** or No
If no, estimate positive results < 10x IDL for which preparation blank was not analyzed.
If more than 20 samples/batch, qualification begins at the 21st sample.

B. Was an ICB analyzed? **Yes** or No

C. Was a CCB analyzed at the frequency stated in the method? **Yes** or No

Data quality may be affected if any of the above answer is "no". Use professional judgment to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

NOTE FOR SOIL SAMPLES
Compare raw sample value with blank results in ug/L unit, or
Convert blanks analyzed during a soil case to mg/Kg in order to compare them with the sample results.

Conc. In ug/L x [Volume diluted to (mL)]/[Weight digested] x 1L/1000mL x 1000g/1Kg x 1mg/1000□g = concentration in wet weight (mg/Kg)

Concentration, dry weight (mg/Kg) = (Wet weight concentration)/(% Solids) x 100

BLANK ANALYSIS RESULTS (Sections 4,5)

Laboratory blanks (PB, ICB/CCB) must first be used to qualify field and/or equipment blanks and samples.
Any contamination remaining in the field or equipment blank will be used to qualify the associated samples.

All criteria were met __X___
Criteria were not met
and/or see below _____

4. Initial/Continuing Calibration Blanks (ICB/CCB) Actions

Are all ICB/CCBs less than the SQL? **Yes** or No

If no, qualify five samples on either side of the ICB/CCB out of control limits. Estimate positive results (J) ≤ the ICB/CCB value.

ICB/CCB#	ANALYTE	CONC/UNITS	SAMPLES AFFECTED

Are the PB less than the SQL? **Yes** or No

If yes, reject all results (R) < 10x the PB value.

PB	ANALYTE	CONC/UNITS	SAMPLES AFFECTED

BLANK ANALYSIS RESULTS (Section 6)

6. Field/Equipment Blank (FB/EB) Actions

Are the FB/EB less than the SQL? **Yes** or No N/A

If no, was the FB/EB value already rejected due to other QC criteria? Yes or No

If no, reject (R) positive results ≤ 5x the FB/EB value. Reject soil data with raw digest results < 5x the FB/EB value

PB	ANALYTE	CONC/UNITS	SAMPLES AFFECTED

All criteria were met __N/A___
Criteria were not met
and/or see below _____

Table 5. Calibration/Preparation Blank Actions for ICP-MS Analysis - Summary

Blank Type	Blank Result	Sample Result	Action for Samples
ICB/CCB	≥ MDL but ≤ CRQL	Non-detect	No action
≥ MDL but ≤ CRQL		Report CRQL value with a "U"	
> CRQL		Use professional judgment	
ICB/CCB	> CRQL	≥ MDL but ≤ CRQL	Report CRQL value with a "U"
> CRQL but < Blank Result		Report at level of Blank Result with a "U"	
> Blank Result		Use professional judgment	
ICB/CCB	≤ (-MDL) but ≥ (-CRQL)	≥ MDL, or non-detect	Use professional judgment
ICB/CCB	< (-CRQL)	< 10x the CRQL	Qualify results that are ≥ CRQL as estimated low (J-) Qualify non-detects as estimated (UJ)
Preparation Blank	> CRQL	≥ MDL but ≤ CRQL	Report CRQL value with a "U"
> CRQL but < 10x the Blank Result		Qualify results as estimated high (J+)	
≥ 10x the Blank Result		No action	
Preparation Blank	≥ MDL but ≤ CRQL	Non-detect	No action
≥ MDL but ≤ CRQL		Report CRQL value with a "U"	
> CRQL		Use professional judgment	
Preparation Blank	< (-CRQL)	< 10x the CRQL	Qualify results that are ≥ CRQL as estimated low (J-) Qualify non-detects as estimated (UJ)

All criteria were met __X___
Criteria were not met
and/or see below _____

INDUCTIVELY COUPLED PLASMA (ICP) INTERFERENCE CHECK SAMPLE

The assessment of the ICP interference check sample (ICS) is to verify the laboratory's interelement and background correction factors.

1. Recovery Criteria

List any elements in the ICS AB and ICS A solutions which did not meet the %R criteria (80 – 120 %).

DATE ELEMENT %R ACTION SAMPLES AFFECTED

_Interference_check_sample_within_method_performance_criteria___ _____
_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____

ACTIONS:

If an element does not meet the %R criteria, follow the actions stated below

% R	%R < 50%	%R = 50-79%	%R = 121-150%	%R > 150%
Qualify Positive/Nondetects Results				
Metals by 6010C/6020	R/R	J/UJ	J/A	R/A

2. Frequency requirements

Were interference QC samples run at the frequency stated in the method (beginning of the analytical run)? **Yes** or No

If no,
ACTIONS: Estimate positive results (J) all samples for which Al, Ca, Fe, Mg > ICS value.

The data may be affected. Use professional judgment to determine the severity of the effect and qualify the data accordingly. Discuss any actions below and list the samples affected.

_____
_____
_____
_____
_____
_____
_____
_____
_____

All criteria were met ___N/A____
Criteria were not met
and/or see below _____

Table 6. Interference Check Actions for ICP-MS Analysis - Summary

Interference Check Sample Results	Action for Samples
ICS not analyzed	Qualify detects and non-detects as unusable (R)
ICS not analyzed in proper sequence	Use professional judgment.
ICS %R>150%	Use professional judgment
ICS %R > 120% (or greater than true value + 2x the CRQL)	Qualify results that are ≥ MDL as estimated high (J+)
ICS %R 80-12-%	No qualification
ICS %R 50-79% (or less than true value – 2x the CRQL)	Qualify results that are ≥ MDL as estimated low (J-) Qualify non-detects as estimated (UJ)
ICSAB %R < 50%	Qualify detects as estimated low (J-) and non-detects as unusable (R)
Potential false positives in field samples with interferents	Qualify results that are ≥ MDL as estimated high (J+)
Potential false negatives in field samples with interferents	Qualify results that are ≥ MDL but < 10x the (|negative value|) as estimated low (J-) Qualify non-detects as estimated (UJ)

All criteria were met ___X____
Criteria were not met
and/or see below _____

VI. MATRIX SPIKE (MS)

Sample # _JC34250-2MS/-2MSD_____ Matrix:__Groundwater__ Units: __ug/L__

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. Note that for Region 2, MS not required for: Ca, Mg, K, and Na for aqueous matrix.

Al, Ca, Fe, Mg, K, Na, for soil matrix
MS Recovery Criteria. List the percent recoveries for analytes which did not meet the %R criteria (75 – 125%); (85 – 115 % FOR Cr (VI)).

ANALYTE	SPIKE SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKE ADDED	% R	ACTION
MS/MSD recoveries and RPD within laboratory control limits.					

ACTIONS: Matrix spike actions apply to all samples of the same matrix. The qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

If the sample results ≥ 4x the spike concentration, no action is taken.
If any analyte does not meet the %R criteria, follow the actions stated below.

Table 9. Spike Sample Actions for ICP-MS Analysis

Spike Sample Results	Action for Samples
Matrix Spike %R < 30% Post-digestion spike %R < 75%	Qualify affected results that are ≥ MDL as estimated low (J-) and affected non-detects as unusable (R)
Matrix Spike %R < 30% Post-digestion spike %R ≥ 75%	Qualify affected results that are ≥ MDL as estimated (J) and affected non-detects as estimated (UJ)
Matrix Spike %R 30-74% Post-digestion Spike %R < 75%	Qualify affected results that are ≥ MDL as estimated low (J-) and affected non-detects as estimated (UJ)
Matrix Spike %R 30-74% Post-digestion spike %R ≥ 75%	Qualify affected results that are ≥ MDL as estimated (J) and affected non-detects as estimated (UJ)
Matrix Spike %R > 125% Post-digestion spike %R > 125%	Qualify affected results that are ≥ MDL as estimated high (J+)
Matrix Spike %R > 125% Post-digestion spike %R ≤ 125%	Qualify affected results that are ≥ MDL as estimated (J)

Spike Sample Results	Action for Samples
Matrix Spike %R < 30% No post-digestion spike performed	Qualify affected results that are ≥ MDL as estimated low (J-) and affected non-detects as unusable (R)
Matrix Spike %R 30-74% No post-digestion spike performed	Qualify affected results that are ≥ MDL as estimated low (J-) and non-detects as estimated (UJ)
Matrix Spike %R > 125% No post-digestion spike performed	Qualify affected results that are ≥ MDL as estimated high (J+) Non-detects are not qualified

2. Frequency Criteria

A. Was a matrix spike prepared at the frequency stated in the method (1/20)? **Yes** or No

If no, estimate positive results (J) for which analyte was not spiked.
If more than 20 samples/batch, qualification begins at the 21st sample.

B. Was a field blank used as spiked sample? Yes or **No**

If yes, estimate positive results (J) < 4x spike level added for the analyte.

A separate worksheet page should be used for each matrix spike

All criteria were met __N/A___
Criteria were not met
and/or see below ____

VII. FIELD DUPLICATES

Sample #:_____-_____ Matrix:_____-_____ Units:_ug/L__

Field duplicate samples may be taken and analyzed as an indication of overall precision. Field duplicate analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measure only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

List the concentrations and RPDs in the field duplicate pair. RPD criteria: ± 20% for aqueous; ± 35% for soil. For soil duplicates, if the % solids for the sample and its duplicate differ by more than 1%, report concentrations in ug/L and calculate RPD or difference for each analyte.

ANALYTE	SQL ug/L	SQL ug/Kg	SAMPLE RESULTS	DUPLICATE RESULTS	RPD	ACTION
Al						
Sb						
As	No field/laboratory duplicates analyzed with data set. MS/MSD % recoveries RPD used to assess precision. RPD within laboratory and generally acceptable control limits					
Ba						
Be						
Cd						
Ca						
Cr						
Co						
Cu						
Fe						
Pb						
Mg						
Mn						
Hg						
Ni						
K						
Se						
Ag						
Na						
Tl						
V						
Zn						
Cyanide						
Cr(VI)						

Field duplicate actions should be applied to only the sample and its duplicate.

All criteria were met __N/A___
Criteria were not met
and/or see below ____

Actions: Indicates which criterion was used to evaluate precision by circling either the RPD or SQL for each element. If both sample and duplicate are nondetects, the RPD is not calculated (NC), no action is needed.

Table 8. Duplicate Sample Actions for ICP-MS Analysis

Duplicate Sample Results	Action for Samples
Aqueous: Both original sample and duplicate sample > 5x the CRQL and 20% < RPD < 100%	Qualify those results that are ≥ CRQL as estimated (J)
Aqueous: Both original sample and duplicate sample > 5x the CRQL and RPD ≥ 100%	Qualify those results that are ≥ CRQL as unusable (R)
Soil/Sediment: Both original sample and duplicate sample > 5x the CRQL and 35% < RPD < 120%	Qualify those results that are ≥ CRQL as estimated (J)
Soil/Sediment: Both original sample and duplicate sample > 5x the CRQL and RPD ≥ 120%	Qualify those results that are ≥ CRQL as unusable (R)
Original sample or duplicate sample ≤ 5x the CRQL (including non-detects) and absolute difference between sample and duplicate > CRQL	Qualify those results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ)

A separate worksheet page should be used for each laboratory duplicate analysis

All criteria were met __X____
Criteria were not met
and/or see below _____

VIII. LABORATORY DUPLICATES (Section 1)

Laboratory run duplicates samples to verify laboratory consistency and precision. They are a measure of laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

1. Difference Criteria

List the concentrations of any analyte not meeting the RPD criteria (± 20% for aqueous; ± 35% for soil). For soil duplicates, if the % solids for the sample and its duplicate differ by more than 1%, report concentrations in □g/L and calculate RPD or difference for each analyte.

Sample # _____ Matrix:_____-_____ Units: ___-____

ANALYTE	SQL ug/L	SQL mg/Kg	SAMPLE RESULTS	DUPLICATE RESULTS	RPD	ACTION
Al						
Sb						
As						
Ba						
Be						
Cd						
Ca						
Cr						
Co						
Cu						
Fe						
Pb						
Mg						
Mn						
Hg						
Ni						
K						
Se						
Ag						
Na						
Tl						
V						
Zn						
Cr(VI)						
Sulfide						
Cyanide						

Note:

Laboratory duplicates actions should be applied to all other samples of the same matrix type. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

All criteria were met __N/A___
Criteria were not met
and/or see below _____

Actions: Indicates which criterion was used to evaluate precision by circling either the RPD or SQL for each element. If both sample and duplicate are non-detects, the RPD is not calculated (NC), no action is needed.

Table 8. Field Duplicate Sample Actions for ICP-MS Analysis

Sample Type	Field Duplicate Result	Action for Samples
Aqueous	Sample and its field duplicate ≥ 5x the CRQL and RPD > 20%	Qualify sample and its duplicate as estimated (J)
	Sample and/or its field duplicate < 5x the CRQL and absolute difference > the CRQL	Qualify results > the MDL as estimated (J) Qualify non-detects as estimated (UJ)
Soil/Sediment	Sample and its field duplicate ≥ 5x the CRQL and RPD > 50%	Qualify sample and its duplicate as estimated (J)
	Sample and/or its field duplicate < 5x the CRQL and absolute difference > 2x the CRQL	Qualify results > the MDL as estimated (J)
		Qualify non-detects as estimated (UJ)

2. Frequency Criteria

A. Was a laboratory duplicate prepared at the frequency stated in the method (1/20)? **Yes** or No

If no, estimate positive results (J) for the analyte which duplicate was not performed. If more than 20 samples/batch, qualification begins at the 21st sample.

B. Was a field blank used for laboratory duplicate analysis? Yes or **No**

If yes, estimate positive results (J) for the analyte if field blank was used for duplicate analysis.

All criteria were met __X___
Criteria were not met
and/or see below _____

IX. LABORATORY CONTROL SAMPLE (LCS/LCSD)

The assessment of the LCSs is to determine both intralaboratory contamination and matrix specific precision and accuracy. Note that for Region 2, LCS is not required for aqueous Hg and Cyanide.

LCS Recoveries Criteria

A. Aqueous LCS/Solid LCS

List any LCS recoveries not within %R criteria (80 – 120%) and the samples affected.

DATE ELEMENT % R ACTION SAMPLES AFFECTED

_____Recoveries_within_laboratory_control_limits_____

Table 7. LCS Actions for ICP-MS Analysis

LCS Result	Action for Samples
%R 40-69%	Qualify results that are ≥ MDL as estimated low (J-) Qualify non-detects as estimated (UJ)
%R > 130%	Qualify results that are ≥ MDL as estimated high (J+)
%R 70-130%	No qualification
%R < 40%	Qualify results that are ≥ MDL as estimated low (J-) Qualify non-detects as unusable (R)
%R > 150%	Qualify detects as unusable (R) ; non-detects no qualification

All criteria were met __X___
Criteria were not met
and/or see below _____

2. Frequency Criteria

A. Was a laboratory control sample prepared at the frequency stated in the method (1/20)? **Yes** or No

If no, estimate positive results (J) for the analyte if LCS was not performed.

If more than 20 samples/batch, qualification begins at the 21st sample.

All criteria were met __X___
Criteria were not met
and/or see below _____

X. ICP SERIAL DILUTION ANALYSIS (Section 1)

The assessment of the ICP serial dilution analysis is to determine the precision of the laboratory through a 5x dilution.

1. Percent Difference (%D) Criteria:

__X__ Serial dilutions were performed for each matrix and results for the diluted samples analysis agreed within 10% of the undiluted analysis for the analyte concentrations ≤ 50x MDL.

_____ Serial dilutions were not performed for the following target analytes: _____

_____ Serial dilutions were performed, but analytical results did not agree within 10% difference for analyte concentrations > 50x IDL before dilution.

List the %Ds for analytes which did not meet the %D criteria (10%/100%)

Sample # _ JC34250-2_____ Matrix:__Groundwater___ Units:_ug/L__

ANALYTE	IDL	50x IDL	SAMPLE RESULTS	SERIAL DILUTION	%D	ACTION
Al						
Sb						
As						
Ba						
Be						
Cd						
Ca						
Cr						
Co						
Cu						
Fe						
Pb						
Mg						
Mn						
Hg						
Ni						
K						
Se						
Ag						
Na						
Tl						
V						
Zn						

Note: Serial dilution within method performance criteria.

All criteria were met __X___
Criteria were not met
and/or see below _____

ACTIONS: Actions apply to all samples of the same matrix. The qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate. Qualify only samples with raw results > 50x MDL.

Flag results with an (E) for elements exhibiting %D > 10%.
Estimate (J) positive results > 50x MDL for elements that exhibited %D > 10 but < 100.

Reject (R) positive results > 50x MDL for elements which exhibited %D ≥ 100%.

SERIAL DILUTION ANALYSIS (Section 2)

2. Frequency Criteria

A. Was a serial dilution analysis prepared as required by the method? **Yes** or No

If no, estimate positive results ≥ 50x MDL (J) for the analyte which serial dilution analysis was not performed.

B. Was a field blank used for serial dilution analysis? Yes or **No**

If yes, estimate positive results ≥ 50x MDL (J) for the analyte if field blank was used for serial dilution analysis.

Table 10. Serial Dilution Actions for ICP-MS Analysis

Serial Dilution Result	Action for Samples
Aqueous: Sample concentration > 50x MDL and 10% < %D < 100%	Qualify affected results whose raw data are > MDL as estimated (J)
Aqueous: Sample concentration > 50x MDL and %D ≥ 100%	Qualify affected results whose raw data are > MDL as unusable (R)
Soil/Sediment: Sample concentration > 50x MDL and 15% < %D < 120%	Qualify affected results whose raw data are > MDL as estimated (J)
Soil/Sediment: Sample concentration > 50x MDL and %D ≥ 120%	Qualify affected results whose raw data are > MDL as unusable (R)
Interferences present	Use professional judgment

A separate worksheet page should be used for each serial dilution analysis.

All criteria were met __N/A___
Criteria were not met
and/or see below _____

XI. ICP-MS INTERNAL STANDARDS

Are internal standard added to the sample? Yes or No?

Are the proper number of internal standard added to the sample? Yes or No?

Is the % Relative Intensities for all internal standards in a sample is within 60-125% of the response in the calibration blank? Yes or No?

Note:_ICP-OES_internal_standards_used;_relative_intensities_within_the_guidance_ _document_performance_criteria._____

Action:

NOTE: Apply the action to the affected analytes for each sample that does not meet the internal standard criteria.

1. If no internal standards were analyzed with the run, the sample data should be qualified as unusable (R). Record this in the Data Review Narrative and note for CLP Project Officer (CLP PO) action.

2. If less than five of the required internal standards were analyzed with the run, or a target analyte(s) is (are) not associated to an internal standard, the sample data, or analyte data not associated to an internal standard should be qualified as unusable (R). Record this in the Data Review Narrative and note for CLP PO action.

3. If the % Relative Intensities for all internal standards in a sample is within 60-125% of the response in the calibration blank, the sample data should not be qualified.

4. If the %RI for an internal standard in a sample is not within the 60-125% limit, qualify the data for those analytes associated with the internal standard(s) outside the limit as follows:

a. If the sample was reanalyzed at a two-fold dilution with internal standard %RI within the limits, report the result of the diluted analysis without qualification. If the %RI of the diluted analysis was not within the 60-125% limit, report the results of the original undiluted analyses and qualify the data for all analytes that are ≥ Method Detection Limit (MDL) in the sample associated with the internal standard as estimated (UJ).

b. If the sample was not reanalyzed at a two-fold dilution, the reviewer should use professional judgment to determine the reliability of the data. The reviewer may determine that the results are estimated (J) or unusable (R).

Table 11. Internal Standard Actions for ICP-MS Analysis

Internal Standard Results	Action for Samples
No internal standards	Qualify all results as unusable (R)
< 5 of the required internal standards	Qualify all results as unusable (R)
Target analyte not associated with internal standard	Qualify all analyte results not associated with an internal standard as unusable (R)
% RI < 60% or > 125%, original sample reanalyzed at 2-fold dilution, and % RI of diluted sample analysis is between 60% and 125%	Do not qualify the data
% RI < 60% or > 125%, original sample reanalyzed at 2-fold dilution, and % RI of diluted sample analysis is outside the 60% to 125% limit	Qualify analytes associated with the failed internal standard that are ≥ MDL as estimated (J) and qualify associated non-detects as estimated (UJ)
Original sample not reanalyzed at 2-fold dilution	Use professional judgment Qualify sample results as estimated (J) or unusable ®

XII. DETECTION LIMITS RESULTS

The detection limit assessment is to verify that samples results are within instrument calibration range or linear range (ICP).

Instrument Detection Limits (IDL). Note IDL is not required for Cyanide.

A. IDL/MDL (or lowest quantitation limit used) results were present and found to be al levels that meet the project objectives? **Yes** or No

B. IDL/MDL (or lowest quantitation limit used) were not met for the following elements:_____

2. Reporting Requirements

A. Were sample results on Form I (or equivalent) reported down to the IDL/MDL or lowest quantitation limit used for all analytes? **Yes** or No

B. Were sample weights, volumes, and dilutions taken into account when reporting results (positive and nondetects)? **Yes** or No

If no, the reported results may be inaccurate. Request the laboratory resubmit the corrected data.

3. Sediment Sample Percent Solids (% solids):

A. Were the % solids for any sediment samples < 50% but ≥ 10%? Yes or No
If yes, estimate positive results and nondetects (J/UJ) if the % solids is 10-50%. List the affected samples:_____

B. Were the % solids for any sediment samples < 10%? Yes or No
If yes, reject all results (R) if the % solid is < 10%. List the affected samples:___N/A_____

XI. TOTAL/DISSOLVED OR INORGANIC/TOTAL ANALYTES

A. Were any analyses performed for dissolved as well as total analytes on the same sample(s)? Yes or **No**

B. Were any analyses performed for inorganic as well as total analytes on the same sample(s)? Yes or **No**

If yes, compare the differences between dissolved (or inorganic) and total analyte concentrations. Compute each difference as a percent of the total analyte only when both of the following conditions are fulfilled:

(1) The dissolved (or inorganic) concentration is greater than total concentration, and
(2) greater than or equal to 5xMDL.

All criteria were met __N/A___
Criteria were not met
and/or see below _____

C. Is any dissolved (or inorganic) concentration greater than its total concentration by more than 20%? Yes or **No**

D. Is any dissolved (or inorganic) concentration greater than its total concentration by more than 50%? Yes or **No**

ACTION:
If the percent difference is greater than 20%, flag (J) both dissolved/inorganic and total concentrations as estimated. If the difference is more than 50%, reject (R) both the values.

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results.

_X___ Sample results fall within the linear range for ICP and within the calibration range for all other parameters.

_____ If samples results were beyond the linear range/calibration range of the instrument, were dilution performed?

List the affected samples/elements/dilution:

In the space below, please show a minimum of one sample calculation per method:

ICP/ICP-MS Computer printout

Hg/Metals by AA

Hexavalent Chromium

Cyanide

Others

For soil samples, the following equation may be necessary to convert raw data values reported in ug/L to actual sample concentrations (mg/Kg):

$$\text{Conc. in ug/L} \times \frac{\text{Volume diluted to, mL}}{\text{Weight digested, g}} \times \frac{1\text{L}}{1000\text{ mL}} \times \frac{1000\text{ g}}{1\text{ Kg}} \times \frac{1\text{ mg}}{1000\text{ mg}} = \text{concentration in wet weight mg/Kg}$$

In addition the sample results are converted to dry weight by using the percent solid calculations:

Wet weight concentration x 100 = final concentration, dry weight (mg/Kg) % solids

OVERALL ASSESSMENT

Action:

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the QC criteria previously discussed.

2. Write a brief Data Review Narrative to give the user an indication of the analytical limitations of the data. Note any discrepancies between the data and the Sample Delivery Group (SDG) Narrative for Contract Laboratory Program Project Officer (CLP PO) action. If sufficient information on the intended use and required quality of the data is available, the reviewer should include an assessment of the data usability within the given context.

3. If any discrepancies are found, the laboratory may be contacted by the Region's designated representative to obtain additional information for resolution. If a discrepancy remains unresolved, the reviewer may determine that qualification of the data is warranted.

Note:_____

EXECUTIVE NARRATIVE

SDG No:	**JC34340**	Laboratory:	**Accutest, New Jersey**
Analysis:	**SW846-8081B**	Number of Samples:	**8**

Location: BMSMC, Building 5 Area
Humacao, PR

SUMMARY: Eight (8) samples were analyzed for the TCL pesticides list following method SW846-8081B. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Hazardous Waste Support Section SOP No. HW-36A, Revision 0, June, 2015. SOM02.2. Pesticide Data Validation.* The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues: **None**
Major: **None**
Minor: **None**

Critical findings: **None**
Major findings: **None**
Minor findings: **1.** Initial and initial calibration verification within the guidance document performance criteria. Continuing calibration % differences meet the performance criteria in at least one of the two columns. Final calibration verification not included in data package. No action taken, professional judgment.

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888

Signature: 

Date: January 28, 2017

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC34340-1
Sample location: BMSMC Building 5 Area
Sampling date: 15-Dec-16
Matrix: AQ - Equipment Blank

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/l	1	-	U	Yes
alpha-BHC	0.011	ug/l	1	-	U	Yes
beta-BHC	0.011	ug/l	1	-	U	Yes
delta-BHC	0.011	ug/l	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/l	1	-	U	Yes
alpha-Chlordane	0.011	ug/l	1	-	U	Yes
gamma-Chlordane	0.011	ug/l	1	-	U	Yes
Dieldrin	0.011	ug/l	1	-	U	Yes
4,4'-DDD	0.011	ug/l	1	-	U	Yes
4,4'-DDE	0.011	ug/l	1	-	U	Yes
4,4'-DDT	0.011	ug/l	1	-	U	Yes
Endrin	0.011	ug/l	1	-	U	Yes
Endosulfan sulfate	0.011	ug/l	1	-	U	Yes
Endrin aldehyde	0.011	ug/l	1	-	U	Yes
Endrin ketone	0.011	ug/l	1	-	U	Yes
Endosulfan-I	0.011	ug/l	1	-	U	Yes
Endosulfan-II	0.011	ug/l	1	-	U	Yes
Heptachlor	0.011	ug/l	1	-	U	Yes
Heptachlor epoxide	0.011	ug/l	1	-	U	Yes
Methoxychlor	0.022	ug/l	1	-	U	Yes
Toxaphene	0.28	ug/l	1	-	U	Yes

Sample ID: JC34340-16
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/l	1	-	U	Yes
alpha-BHC	0.011	ug/l	1	-	U	Yes
beta-BHC	0.011	ug/l	1	-	U	Yes
delta-BHC	0.011	ug/l	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/l	1	-	U	Yes
alpha-Chlordane	0.011	ug/l	1	-	U	Yes
gamma-Chlordane	0.011	ug/l	1	-	U	Yes
Dieldrin	0.011	ug/l	1	-	U	Yes
4,4'-DDD	0.011	ug/l	1	-	U	Yes
4,4'-DDE	0.011	ug/l	1	-	U	Yes
4,4'-DDT	0.011	ug/l	1	-	U	Yes
Endrin	0.011	ug/l	1	-	U	Yes
Endosulfan sulfate	0.011	ug/l	1	-	U	Yes
Endrin aldehyde	0.011	ug/l	1	-	U	Yes
Endrin ketone	0.011	ug/l	1	-	U	Yes
Endosulfan-I	0.011	ug/l	1	-	U	Yes
Endosulfan-II	0.011	ug/l	1	-	U	Yes
Heptachlor	0.011	ug/l	1	-	U	Yes
Heptachlor epoxide	0.011	ug/l	1	-	U	Yes
Methoxychlor	0.022	ug/l	1	-	U	Yes
Toxaphene	0.28	ug/l	1	-	U	Yes

Sample ID: JC34340-18
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.010	ug/l	1	-	U	Yes
alpha-BHC	0.010	ug/l	1	-	U	Yes
beta-BHC	0.010	ug/l	1	-	U	Yes
delta-BHC	0.010	ug/l	1	-	U	Yes
gamma-BHC (Lindane)	0.010	ug/l	1	-	U	Yes
alpha-Chlordane	0.010	ug/l	1	-	U	Yes
gamma-Chlordane	0.010	ug/l	1	-	U	Yes
Dieldrin	0.010	ug/l	1	-	U	Yes
4,4'-DDD	0.010	ug/l	1	-	U	Yes
4,4'-DDE	0.010	ug/l	1	-	U	Yes
4,4'-DDT	0.010	ug/l	1	-	U	Yes
Endrin	0.010	ug/l	1	-	U	Yes
Endosulfan sulfate	0.010	ug/l	1	-	U	Yes
Endrin aldehyde	0.010	ug/l	1	-	U	Yes
Endrin ketone	0.010	ug/l	1	-	U	Yes
Endosulfan-I	0.010	ug/l	1	-	U	Yes
Endosulfan-II	0.010	ug/l	1	-	U	Yes
Heptachlor	0.010	ug/l	1	-	U	Yes
Heptachlor epoxide	0.010	ug/l	1	-	U	Yes
Methoxychlor	0.020	ug/l	1	-	U	Yes
Toxaphene	0.25	ug/l	1	-	U	Yes

Sample ID: JC34340-19
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/l	1	-	U	Yes
alpha-BHC	0.011	ug/l	1	-	U	Yes
beta-BHC	0.011	ug/l	1	-	U	Yes
delta-BHC	0.011	ug/l	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/l	1	-	U	Yes
alpha-Chlordane	0.011	ug/l	1	-	U	Yes
gamma-Chlordane	0.011	ug/l	1	-	U	Yes
Dieldrin	0.011	ug/l	1	-	U	Yes
4,4'-DDD	0.011	ug/l	1	-	U	Yes
4,4'-DDE	0.011	ug/l	1	-	U	Yes
4,4'-DDT	0.011	ug/l	1	-	U	Yes
Endrin	0.011	ug/l	1	-	U	Yes
Endosulfan sulfate	0.011	ug/l	1	-	U	Yes
Endrin aldehyde	0.011	ug/l	1	-	U	Yes
Endrin ketone	0.011	ug/l	1	-	U	Yes
Endosulfan-I	0.011	ug/l	1	-	U	Yes
Endosulfan-II	0.011	ug/l	1	-	U	Yes
Heptachlor	0.011	ug/l	1	-	U	Yes
Heptachlor epoxide	0.011	ug/l	1	-	U	Yes
Methoxychlor	0.022	ug/l	1	-	U	Yes
Toxaphene	0.28	ug/l	1	-	U	Yes

Sample ID: JC34340-20
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/l	1	-	U	Yes
alpha-BHC	0.011	ug/l	1	-	U	Yes
beta-BHC	0.011	ug/l	1	-	U	Yes
delta-BHC	0.011	ug/l	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/l	1	-	U	Yes
alpha-Chlordane	0.011	ug/l	1	-	U	Yes
gamma-Chlordane	0.011	ug/l	1	-	U	Yes
Dieldrin	0.011	ug/l	1	-	U	Yes
4,4'-DDD	0.011	ug/l	1	-	U	Yes
4,4'-DDE	0.011	ug/l	1	-	U	Yes
4,4'-DDT	0.011	ug/l	1	-	U	Yes
Endrin	0.011	ug/l	1	-	U	Yes
Endosulfan sulfate	0.011	ug/l	1	-	U	Yes
Endrin aldehyde	0.011	ug/l	1	-	U	Yes
Endrin ketone	0.011	ug/l	1	-	U	Yes
Endosulfan-I	0.011	ug/l	1	-	U	Yes
Endosulfan-II	0.011	ug/l	1	-	U	Yes
Heptachlor	0.011	ug/l	1	-	U	Yes
Heptachlor epoxide	0.011	ug/l	1	-	U	Yes
Methoxychlor	0.022	ug/l	1	-	U	Yes
Toxaphene	0.28	ug/l	1	-	U	Yes

Sample ID: JC34340-21
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: AQ - Field Blank Water

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/l	1	-	U	Yes
alpha-BHC	0.011	ug/l	1	-	U	Yes
beta-BHC	0.011	ug/l	1	-	U	Yes
delta-BHC	0.011	ug/l	1	-	U	Yes
gamma-BHC (Lindane)	0.011	ug/l	1	-	U	Yes
alpha-Chlordane	0.011	ug/l	1	-	U	Yes
gamma-Chlordane	0.011	ug/l	1	-	U	Yes
Dieldrin	0.011	ug/l	1	-	U	Yes
4,4'-DDD	0.011	ug/l	1	-	U	Yes
4,4'-DDE	0.011	ug/l	1	-	U	Yes
4,4'-DDT	0.011	ug/l	1	-	U	Yes
Endrin	0.011	ug/l	1	-	U	Yes
Endosulfan sulfate	0.011	ug/l	1	-	U	Yes
Endrin aldehyde	0.011	ug/l	1	-	U	Yes
Endrin ketone	0.011	ug/l	1	-	U	Yes
Endosulfan-I	0.011	ug/l	1	-	U	Yes
Endosulfan-II	0.011	ug/l	1	-	U	Yes
Heptachlor	0.011	ug/l	1	-	U	Yes
Heptachlor epoxide	0.011	ug/l	1	-	U	Yes
Methoxychlor	0.022	ug/l	1	-	U	Yes
Toxaphene	0.28	ug/l	1	-	U	Yes

Sample ID: JC34340-16MS
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.26	ug/l	1	-	-	Yes
alpha-BHC	0.28	ug/l	1	-	-	Yes
beta-BHC	0.27	ug/l	1	-	-	Yes
delta-BHC	0.30	ug/l	1	-	-	Yes
gamma-BHC (Lindane)	0.29	ug/l	1	-	-	Yes
alpha-Chlordane	0.39	ug/l	1	-	-	Yes
gamma-Chlordane	0.29	ug/l	1	-	-	Yes
Dieldrin	0.30	ug/l	1	-	-	Yes
4,4'-DDD	0.30	ug/l	1	-	-	Yes
4,4'-DDE	0.25	ug/l	1	-	-	Yes
4,4'-DDT	0.16	ug/l	1	-	-	Yes
Endrin	0.29	ug/l	1	-	-	Yes
Endosulfan sulfate	0.29	ug/l	1	-	-	Yes
Endrin aldehyde	0.30	ug/l	1	-	-	Yes
Endrin ketone	0.28	ug/l	1	-	-	Yes
Endosulfan-I	0.29	ug/l	1	-	-	Yes
Endosulfan-II	0.30	ug/l	1	-	-	Yes
Heptachlor	0.27	ug/l	1	-	-	Yes
Heptachlor epoxide	0.29	ug/l	1	-	-	Yes
Methoxychlor	0.26	ug/l	1	-	-	Yes
Toxaphene	ND	ug/l	1	-	-	Yes

Sample ID: JC34340-16MSD
Sample location: BMSMC Building 5 Area
Sampling date: 22-Dec-16
Matrix: Groundwater

METHOD: 8081B

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.26	ug/l	1	-	-	Yes
alpha-BHC	0.28	ug/l	1	-	-	Yes
beta-BHC	0.27	ug/l	1	-	-	Yes
delta-BHC	0.31	ug/l	1	-	-	Yes
gamma-BHC (Lindane)	0.29	ug/l	1	-	-	Yes
alpha-Chlordane	0.38	ug/l	1	-	-	Yes
gamma-Chlordane	0.29	ug/l	1	-	-	Yes
Dieldrin	0.30	ug/l	1	-	-	Yes
4,4'-DDD	0.32	ug/l	1	-	-	Yes
4,4'-DDE	0.26	ug/l	1	-	-	Yes
4,4'-DDT	0.160	ug/l	1	-	-	Yes
Endrin	0.29	ug/l	1	-	-	Yes
Endosulfan sulfate	0.30	ug/l	1	-	-	Yes
Endrin aldehyde	0.27	ug/l	1	-	-	Yes
Endrin ketone	0.28	ug/l	1	-	-	Yes
Endosulfan-I	0.30	ug/l	1	-	-	Yes
Endosulfan-II	0.31	ug/l	1	-	-	Yes
Heptachlor	0.27	ug/l	1	-	-	Yes
Heptachlor epoxide	0.29	ug/l	1	-	-	Yes
Methoxychlor	0.25	ug/l	1	-	-	Yes
Toxaphene	ND	ug/l	1	-	-	Yes

DATA REVIEW WORKSHEETS

Project/Case Number:_____JC34340___
Sampling Date:_____12/21-22/2016___
Shipping Date:_____12/22/2016_____
EPA Region No.:_____2_____

REVIEW OF PESTICIDE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Hazardous Waste Support Section SOP No. HW-36A, Revision 0, June, 2015. SOM02.2. Pesticide Data Validation.* The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _Accutest_____ data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: __JC34340_____ Sample matrix: _____Groundwater_____
No. of Samples: _____8_____

Trip blank No.: _____-_____
Field blank No.: _____JC34340-21_____
Equipment blank No.:____JC34340-15_____
Field duplicate No.:_____
Field spikes No.:_____JC34340-16MS/-16MSD_____
QC audit samples:_____-_____

___X___ Data Completeness
___X___ Holding Times
__N/A__ GC/MS Tuning
___X__ Internal Standard Performance
___X___ Blanks
___X___ Surrogate Recoveries
___X___ Matrix Spike/Matrix Spike Duplicate
__X____ Laboratory Control Spikes
__X____ Field Duplicates
__X____ Calibrations
__X____ Compound Identifications
__X____ Compound Quantitation
__X____ Quantitation Limits

Overall Comments:__TCL_pesticides_list_by_SW846-8081B_____
_____
_____
_____
_____

Definition of Qualifiers:

J-	Estimated results	U-	Compound not detected
R-	Rejected data	UJ-	Estimated nondetect

Reviewer:_____
Date:__January_28,_2017_____

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were met __X__
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED/ANALYZED	ACTION
Samples properly preserved. All samples extracted and analyzed within the required criteria.			

Note:

Criteria

Aqueous samples - seven (7) days from sample collection for extraction; 40 days from sample collection for analysis.
Non-aqueous samples – fourteen (14) days from sample collection for extraction; 40 days from sample collection for analysis.

Cooler temperature (Criteria: 4 ± 2 °C): 5.4°C - OK

Actions

Qualify aqueous sample results using preservation and technical holding time information as follows:

a. If there is no evidence that the samples were properly preserved (T = 4°C ± 2°C), and the samples were extracted or analyzed within the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ).

b. If there is no evidence that the samples were properly preserved (T = 4°C ± 2°C), and the samples were extracted or analyzed outside the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ).

c. If the samples were properly preserved, and were extracted and analyzed within the technical holding times, no qualification of the data is necessary.

d. If the samples were properly preserved, and were extracted or analyzed outside the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ). Note in the Data

Review Narrative that holding times were exceeded and the effect of exceeding the holding time on the resulting data.
e. Use professional judgment to qualify samples whose temperature upon receipt at the laboratory is either below 2 degrees centigrade or above 6 degrees centigrade.
f. If technical holding times are grossly exceeded, use professional judgment to qualify the data.

Qualify non-aqueous sample results using preservation and technical holding time information as follows:
a. If there is no evidence that the samples were properly preserved (T = 4°C ± 2°C), and the samples were extracted or analyzed within the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ).
b. If there is no evidence that the samples were properly preserved (T = 4°C ± 2°C), and the samples were extracted or analyzed outside the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ).
c. If the samples were properly preserved, and were extracted and analyzed within the technical holding time, no qualification of the data is necessary.
d. If the samples were properly preserved, and were extracted or analyzed outside the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ). Note in the Data Review Narrative that holding times were exceeded and the effect of exceeding the holding time on the resulting data.
e. Use professional judgment to qualify samples whose temperature upon receipt at the laboratory is either below 2 degrees centigrade or above 6 degrees centigrade.
f. If technical holding times are grossly exceeded, use professional judgment to qualify the data.

All criteria were met ___X___
Criteria were not met see below _____

GAS CHROMATOGRAPH WITH ELECTRON CAPTURE DETECTOR (GC/ECD) INSTRUMENT PERFORMANCE CHECK (SECTIONS 1 TO 5)

1. Resolution Check Mixture

Criteria

Is the resolution between two adjacent peaks in the Resolution Check Mixture C greater than or equal to 80.0% for all analytes for the primary column and greater than or equal to 50.0% for the confirmation column? **Yes**? or No?

Is the resolution between two adjacent peaks in the Resolution Check Mixture (A and B) greater than or equal to 60.0%? Yes? or No?

Note: If resolution criteria are not met, the quantitative results may not be accurate due to inadequate resolution. Qualitative identifications may also be questionable if coelution exists.

Action

a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
b. Qualify non-detected compounds as unusable (R).

2. Performance Evaluation Mixture (PEM) Resolution Criteria

Criteria

Is PEM analysis performed at the required frequency (at the end of each pesticide initial calibration sequence and every 12 hours)? **Yes**? or No?

Action

a. If PEM is not performed at the required frequency, qualify all associated sample and blank results as unusable (R).

Criteria

Is PEM % Resolution < 90%? Yes? or **No?**

Action

a. a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
b. Qualify non-detected compounds as unusable (R).

All criteria were met ___X___
Criteria were not met see below ____

3. PEM 4,4'-DDT Breakdown

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is detected? Yes? or **No**?

Action

a. Qualify detects for 4,4'-DDT; detects for 4,4'-DDD; and detects for 4,4'-DDE as estimated (J)

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is not detected Yes? or **No**?

Action

a. Qualify non-detects for 4,4'- DDT as unusable (R)
b. Qualify detects for 4,4'-DDD as tentatively identified (NJ)
c. Qualify detects for 4,4'-DDE as tentatively identified (NJ)

4. PEM Endrin Breakdown

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is detected? Yes? or **No**?

Action

a. Qualify detects for Endrin; detects for Endrin aldehyde; and detects for Endrin ketone as estimated (J)

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is not detected Yes? or **No**?

Action

a. Qualify non-detects for Endrin as unusable (R)
b. Qualify detects for Endrin aldehyde as tentatively identified (NJ)
c. Qualify detects for Endrin ketone as tentatively identified (NJ)

All criteria were met ___X___
Criteria were not met see below _____

5. Mid-point Individual Standard Mixture Resolution -

Criteria

Is the resolution between two adjacent peaks in the Resolution Check Mixture C greater than or equal to 80.0% for all analytes for the primary column and greater than or equal to 50.0% for the confirmation column? **Yes**? or No?

Is the resolution between two adjacent peaks in the Resolution Check Mixture (A and B) greater than or equal to 90.0%? **Yes**? or No?

Note: If resolution criteria are not met, the quantitative results may not be accurate due to inadequate resolution. Qualitative identifications may also be questionable if coelution exists.

Action

a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
b. Qualify non-detected compounds as unusable (R).

Criteria

Is mid-point individual standard mixture analysis performed at the required frequency (every 12 hours)? **Yes**? or No?

Action

a. If the mid-point individual standard mixture analysis is not performed at the required frequency, qualify all associated sample and blank results as unusable (R).

All criteria were met __X____
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____11/15/16_____
Dates of initial calibration verification:_____12/15/16_____
Dates of continuing calibration:___01/03/17;_01/04/17_____
Dates of final calibration_____-_____
Instrument ID numbers:_____GCG8_____
Matrix/Level:_____Aqueous/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and initial calibration verification within the guidance document performance criteria. Continuing calibration % differences meet the performance criteria in the two columns. Final calibration verification included in data package.				

Criteria

Are a five point calibration curve delivered with concentration levels as shown in Table 3 of SOP HW-36A, Revision 0, June, 2015? **Yes**? or No?

Actions

If the standard concentrations listed in Table 3 are not used, use professional judgment to evaluate the effect on the data

Criteria

Are RT Windows calculated correctly? **Yes**? or No?

Action

Recalculate the windows and use the corrected values for all evaluations.

Criteria

Are the Percent Relative Standard Deviation (%RSD) of the CFs for each of the single component target compounds less than or equal to 20.0%, except for alpha-BHC and delta-BHC?

Yes? or No?

All criteria were met __X__
Criteria were not met
and/or see below _____

Are the %RSD of the CFs for alpha-BHC and delta-BHC less than or equal to 25.0%. **Yes**? or No?

Is the %RSD of the CFs for each of the Toxaphene peaks must be < 30% when 5-point ICAL is performed? **Yes**? or No?

Is the %RSD of the CFs for the two surrogates (tetrachloro-m-xylene and decachlorobiphenyl) less than or equal to 30.0%. **Yes**? or No?

Action

a. If the %RSD criteria are not met, qualify detects as estimated (J) and use professional judgment to qualify non-detected target compounds.
b. If the %RSD criteria are within allowable limits, no qualification of the data is necessary

Continuing Calibration Checks

Criteria

Is the continuing calibration standard analyzed at the acceptable time intervals? **Yes**? or No?

Action

a. If more than 14 hours has elapsed from the injection of the instrument blank that begins an analytical sequence (opening CCV) and the injection of either a PEM or mid-point concentration of the Individual Standard Mixtures (A and B) or (C), qualify all data as unusable (R).
b. If more than 12 hours has elapsed from the injection of the instrument blank that begins an analytical sequence (opening CCV) and the injection of the last sample or blank that is part of the same analytical sequence, qualify all data as unusable (R).
c. If more than 72 hours has elapsed from the injection of the sample with a Toxaphene detection and the Toxaphene Calibration Verification Standard (CS3), qualify all data as unusable (R).

Criteria

Is the Percent Difference (%D) within ±25.0% for the PEM sample? Yes? or **No**?

Action
a. Qualify associated detects as estimated (J) and non-detects as estimated (UJ).

Criteria

For the Calibration Verification Standard (CS3); is the Percent Difference (%D) within ± 25.0%? Yes? or **No**?

Action

Qualify associated detects as estimated (J) and non-detects as estimated (UJ).

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is detected? Yes? or **No**?

Action

a. Qualify detects for 4,4'-DDT; detects for 4,4'-DDD; and detects for 4,4'-DDE as estimated (J)
b. Non-detected associated compounds are not qualified

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is not detected Yes? or **No**?

Action

a. Qualify non-detects for 4,4'- DDT as unusable (R)
b. Qualify detects for 4,4'-DDD as tentatively identified (NJ)
c. Qualify detects for 4,4'-DDE as tentatively identified (NJ)

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is detected? Yes? or **No**?

Action

a. Qualify detects for Endrin; detects for Endrin aldehyde; and detects for Endrin ketone as estimated (J)
b. Non-detected associated compounds are not qualified

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is not detected Yes? or **No**?

Action

a. Qualify non-detects for Endrin as unusable (R)
b. Qualify detects for Endrin aldehyde as tentatively identified (NJ)
c. Qualify detects for Endrin ketone as tentatively identified (NJ)

A separate worksheet should be filled for each initial curve

All criteria were met __X__
Criteria were not met
and/or see below _____

BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

CRQL concentration_____N/A_____

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No target analytes detected in method blanks at a reporting limit of 0.01, 0.02, and 0.25 ug/L				

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No target anayte detected in the field/equipment blanks analyzed with this data package.				

All criteria were met __X__
Criteria were not met
and/or see below _____

BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

The concentration of non-target compounds in all blanks must be less than or equal to 10 µg/L. The concentration of each target compound found in the method or field blanks must be less than its CRQL listed in the method.

Data concerning the field blanks are not evaluated as part of the CCS process. If field blanks are present, the data reviewer should evaluate this data in a similar fashion as the method blanks.

Specific actions are as follows:

Blank Actions for Pesticide Analyses

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Sulfur Cleanup, Instrument, Field, TCLP/SPLP	Detects	Not detected	No qualification required
	< CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification required
	> CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL and ≤ blank concentration	Report blank value for sample concentration with a U
		≥ CRQL and > blank concentration	No qualification required
	= CRQL	≤ CRQL	Report CRQL value with a U
		> CRQL	No qualification required
	Gross contamination	Detects	Report blank value for sample concentration with a U

DATA REVIEW WORKSHEETS

All criteria were met __X__
Criteria were not met
and/or see below _____

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met __X__
Criteria were not met
and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: Aqueous

Lab Sample ID	Lab File ID	S1 a	S1 b	S2 a	S2 b
JC34340-15	8G1635.D	96	100	30	29
JC34340-16	8G1631.D	91	91	80	70
JC34340-18	8G1664.D	96	102	49	47
JC34340-19	8G1665.D	81	87	59	59
JC34340-20	8G1666.D	103	110	79	73
JC34340-21	8G1667.D	90	95	61	57
OP99539-BS1	8G1630.D	97	100	58	50
OP99539-MB1	8G1629.D	90	91	45	41
OP99539-MS	8G1632.D	97	96	63	49
OP99539-MSD	8G1633.D	94	94	75	63

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	26-132%
S2 = Decachlorobiphenyl	10-118%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

Note: Surrogate recoveries within laboratory control limits.

Actions:

a. For any surrogate recovery greater than 150%, qualify detected target compounds as biased high (J+).
b. Do not qualify non-detected target compounds for surrogate recovery > 150 %.
c. If both surrogate recoveries are greater than or equal to 30% and less than or equal to 150%, no qualification of the data is necessary.
d. For any surrogate recovery greater than or equal to 10% and less than 30%, qualify detected target compounds as biased low (J-).
e. For any surrogate recovery greater than or equal to 10% and less than 30%, qualify non-detected target compounds as approximated (UJ).

f. If low surrogate recoveries are from sample dilution, professional judgment should be used to determine if the resulting data should be qualified. If sample dilution is not a factor:

i. Qualify detected target compounds as biased low (J-).
ii. Qualify non-detected target compounds as unusable (R).

g. If surrogate RTs in PEMs, Individual Standard Mixtures, samples, and blanks are outside of the RT Windows, the reviewer must use professional judgment to qualify data.

h. If surrogate RTs are within RT windows, no qualification of the data is necessary.

i. If the two surrogates were not added to all samples, MS/MSDs, standards, LCSs, and blanks, use professional judgment in qualifying data as missing surrogate analyte may not directly apply to target analytes.

Summary Surrogate Actions for Pesticide Analyses

Criteria	Action*	
	Detected Target Compounds	Non-detected Target Compounds
%R > 150%	J+	No qualification
30% < %R < 150%	No qualification	
10% < %R < 30%	J-	UJ
%R < 10% (sample dilution not a factor)	J-	R
%R < 10% (sample dilution is a factor)	Use professional judgment	
RT out of RT window	Use professional judgment	
RT within RT window	No qualification	

* Use professional judgment in qualifying data, as surrogate recovery problems may not directly apply to target analytes.

All criteria were met ___X___
Criteria were not met
and/or see below _____

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

Data for MS and MSDs will not be present unless requested by the Region.
Notify the Contract Laboratory Program Project Officer (CLP PO) if a field blank was used for the MS and MSD, unless designated as such by the Region.

> **NOTE:** For a Matrix Spike that does not meet criteria, apply the action to only the field sample used to prepare the Matrix Spike sample. If it is clearly stated in the data validation materials that the samples were taken through incremental sampling or some other method guaranteeing the homogeneity of the sample group, then the entire sample group may be qualified.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:____JC34340-16MS/MSD___ Matrix/Level:__Groundwater___

Note: MS/MSD % recoveries and RPD within laboratory control limits.

Action

No qualification of the data is necessary on MS and MSD data alone. However, using professional judgment, the validator may use the MS and MSD results in conjunction with other QC criteria and determine the need for some qualification of the data.

A separate worksheet should be used for each MS/MSD pair.

All criteria were met __X__
Criteria were not met
and/or see below _____

LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

LCS Spike Compound	Recovery Limits (%)
gamma-BHC	50 – 120
Heptachlor epoxide	50 – 150
Dieldrin	30 – 130
4,4'-DDE	50 – 150
Endrin	50 – 120
Endosulfan sulfate	50 – 120
trans-Chlordane	30 – 130
Tetrachloro-m-xylene (surrogate)	30 – 150
Decachlorobiphenyl (surrogate)	30 – 150

LCS concentrations:____0.25_ug/l;_____

List the %R of compounds which do not meet the criteria

LCS ID COMPOUND % R QC LIMIT

_____%_recovery_and_RPD_within_laboratory_control_limits._____
_____
_____
_____

Note:

Action

The following guidance is suggested for qualifying sample data for which the associated LCS does not meet the required criteria.
a. If the LCS recovery exceeds the upper acceptance limit, qualify detected target compounds as estimated (J). Do not qualify non-detected target compounds.
b. If the LCS recovery is less than the lower acceptance limit, qualify detected target compounds as estimated (J) and non-detects as unusable (R).
c. Use professional judgment to qualify data for compounds other than those compounds that are included in the LCS.
d. Use professional judgment to qualify non-LCS compounds. Take into account the compound class, compound recovery efficiency, analytical problems associated with each compound, and comparability in the performance of the LCS compound to the non-LCS compound.

e. If the LCS recovery is within allowable limits, no qualification of the data is necessary.

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? **Yes** or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met _____
Criteria were not met
and/or see below __N/A____

FLORISIL CARTRIDGE PERFORMANCE CHECK

NOTE: Florisil cartridge cleanup is mandatory for all extracts.

Criteria

Is the Florisil cartridge performance check conducted at least once on each lot of cartridges used for sample cleanup or every 6 months, whichever is most frequent? Yes? or No? **N/A**

Criteria

Are the results for the Florisil Cartridge Performance Check solution included with the data package? Yes? or No? **N/A**

Note: If % criteria are not met, examine the raw data for the presence of polar interferences and use professional judgment in qualifying the data as follows:

Action:

a. If the Percent Recovery is greater than 120% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected compounds as estimated (J). Do not qualify non-detected target compounds.
b. If the Percent Recovery is greater than or equal to 80% and less than or equal to 120% for all the pesticide target compounds, no qualification of the data is necessary.
c. If the Percent Recovery is greater than or equal to 10% and less than 80% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected target compounds as estimated (J) and non-detected target compounds as approximated (UJ).
d. If the Percent Recovery is less than 10% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected compounds as estimated (J) and qualify non-detected target compounds as unusable (R).
e. If the Percent Recovery of 2,4,5-trichlorophenol in the Florisil Cartridge Performance Check is greater than or equal to 5%, use professional judgment to qualify detected and non-detected target compounds, considering interference on the sample chromatogram.

Note: State in the Data Review Narrative potential effects on the sample data resulting from the Florisil Cartridge Performance Check analysis not yielding acceptable results.

Note:_ No information for florisil cartridge performance check included in data package. There is evidence tahtFlorisil cartridge was used for sample extraction/clean-up. No qualification of the data performed, professional judgment.

All criteria were met __N/A___
Criteria were not met
and/or see below _____

GEL PERMEATION CHROMATOGRAPHY (GPC) PERFORMANCE CHECK

NOTE: GPC cleanup is mandatory for all soil samples.

If GPC criteria are not met, examine the raw data for the presence of high molecular weight contaminants; examine subsequent sample data for unusual peaks; and use professional judgment in qualifying the data. Notify the Contract Laboratory Program Project Officer (CLP PO) if the laboratory chooses to analyze samples under unacceptable GPC criteria.

Action:

a. If the Percent Recovery is less than 10% for the pesticide compounds and surrogates during the GPC calibration check, the non-detected target compounds may be suspect, qualify detected compounds as estimated (J).
b. If the Percent Recovery is less than 10% for the pesticide compounds and surrogates during the GPC calibration check, qualify all non-detected target compounds as unusable (R).
c. If the Percent Recovery is greater than or equal to 10% and is less than 80% for any of the pesticide target compounds in the GPC calibration, qualify detected target compounds as estimated (J) and non-detected target compounds as approximated (UJ).
d. If the Percent Recovery is greater than or equal to 80% and less than or equal to 120% for all the pesticide target compounds, no qualification of the data is necessary.
e. If high recoveries (i.e., greater than 120%) were obtained for the pesticides and surrogates during the GPC calibration check, qualify detected compounds as estimated (J). Do not qualify non-detected target compounds.

Note: State in the Data Review Narrative potential effects on the sample data resulting from the GPC cleanup analyses not yielding acceptable results.

Note:_ No information for performance of GPC cleanup included in data package. No qualification of the data performed, professional judgment.

All criteria were met ___X___
Criteria were not met
and/or see below _____

TARGET COMPOUND IDENTIFICATION

Criteria:

1. Is Retention Times (RTs) of both of the surrogates and reported target compounds in each sample within the calculated RT Windows on both columns? **Yes**? or No?

2. Is the Tetrachloro-m-xylene (TCX) RT ±0.05 minutes of the Mean RT (RT) determined from the initial calibration and Decachlorobiphenyl (DCB) within ±0.10 minutes of the RT determined from the initial calibration? **Yes**? or No?

3. Is the Percent Difference (%D) for the detected mean concentrations of a pesticide target compound between the two Gas Chromatograph (GC) columns within the inclusive range of ± 25.0 %? **Yes**? or No?

4. When no analytes are identified in a sample; are the chromatograms from the analyses of the sample extract and the low-point standard of the initial calibration associated with those analyses on the same scaling factor? **Yes**? or No?

5. Does the chromatograms display the Single Component Pesticides (SCPs) detected in the sample and the largest peak of any multi-component analyte detected in the sample at less than full scale. Yes? or **No**?

6. If an extract is diluted; does the chromatogram display SCPs peaks between 10-100% of full scale, and multi-component analytes between 25-100% of full scale? Yes? or No? **N/A**

7. For any sample; does the baseline of the chromatogram return to below 50% of full scale before the elution time of alpha-BHC, and also return to below 25% of full scale after the elution time of alpha-BHC and before the elution time of DCB? **Yes**? or No?

8. If a chromatogram is replotted electronically to meet these requirements; is the scaling factor used displayed on the chromatogram, and both the initial chromatogram and the replotted chromatogram submitted in the data package. Yes? or **No**?

Action:

a. If the qualitative criteria for both columns were not met, all target compounds that are reported as detected should be considered non-detected.

b. Use professional judgment to assign an appropriate quantitation limit using the following guidance:

i. If the detected target compound peak was sufficiently outside the pesticide RT Window, the reported values may be a false positive and should be replaced with the sample Contract Required Quantitation Limits (CRQL) value.

ii. If the detected target compound peak poses an interference with potential detection of another target peak, the reported value should be considered and qualified as unusable (R).

c. If the data reviewer identifies a peak in both GC column analyses that falls within the appropriate RT Windows, but was reported as a non-detect, the compound may be a false negative. Use professional judgment to decide if the compound should be included.

Note: State in the Data Review Narrative all conclusions made regarding target compound identification.

d. If the Toxaphene peak RT windows determined from the calibration overlap with SCPs or chromatographic interferences, use professional judgment to qualify the data.

e. If target compounds were detected on both GC columns, and the Percent Difference between the two results is greater than 25.0%, consider the potential for coelution and use professional judgment to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, use professional judgment to determine how best to report, and if necessary, qualify the data according to these guidelines.

f. If Toxaphene exhibits a marginal pattern-matching quality, use professional judgment to establish whether the differences are due to environmental "weathering" (i.e., degradation of the earlier eluting peaks relative to the later eluting peaks). If the presence of Toxaphene is strongly suggested, report results as presumptively present (N).

GAS CHROMATOGRAPH/MASS SPECTROMETER (GC/MS) CONFIRMATION

NOTE: This confirmation is not usually provided by the laboratory. In cases where it is provided, use professional judgment to determine if data qualified with "C" can be salvaged if it was previously qualified as unusable (R).

Action:

a. If the quantitative criteria for both columns were met (≥ 5.0 ng/µL for SCPs and ≥ 125 ng/µL for Toxaphene), determine whether GC/MS confirmation was performed. If it was performed, qualify the data using the following guidance:

i. If GC/MS confirmation was not required because the quantitative criteria for both columns was not met, but it was still performed, use professional judgment when evaluating the data to decide whether the detect should be qualified with "C".

ii. If GC/MS confirmation was performed, but unsuccessful for a target compound detected by GC/ECD analysis, qualify those detects as "X".

All criteria were met ___X___
Criteria were not met
and/or see below _____

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JC34340-1 tetrachloro-m-xylene RF = 0.982

[ ] = (87236052)(50)/(115.7 X 10^6)(0.982)
= 38.4 ppb Ok

Action:

a. If sample quantitation is different from the reported value, qualify result as unusable (R).
b. When a sample is analyzed at more than one dilution, the lowest CRQLs are used unless a QC exceedance dictates the use of the higher CRQLs from the diluted sample.
c. Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original reporting form and substituting the data from the diluted sample.
d. Results between the MDL and CRQL should be qualified as estimated (J).
e. Results less than the MDL should be reported at the CRQL and qualified (U). MDLs themselves are not reported.
f. For non-aqueous samples, if the percent moisture is less than 70.0%, no qualification of the data is necessary. If the percent moisture is greater than or equal to 70.0% and less than 90.0%, qualify detects as estimated (J) and non-detects as approximated (UJ). If the percent moisture is greater than or equal to 90.0%, qualify detects as estimated (J) and non-detects as unusable (R) (see Table).

Percent Moisture Actions for Pesticide Analysis for Non-Aqueous Samples

Criteria	Action	
	Detected Associated Compounds	**Non-detected Associated Compounds**
% Moisture < 70.0	No qualification	
70.0 < % Moisture < 90.0	J	UJ
% Moisture > 90.0	J	R

List samples which have ≤ 50 % solids

Note: If any discrepancies are found, the Region's designated representative may contact the laboratory to obtain additional information that could resolve any differences. If a discrepancy remains unresolved, the reviewer must use professional judgment to decide which value is the most accurate. Under these circumstances, the reviewer may determine that qualification of data is warranted. Note in the Data Review Narrative a description of the reasons for data qualification and the qualification that is applied to the data.

Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

All criteria were met __N/A___
Criteria were not met
and/or see below _____

FIELD DUPLICATE PRECISION

NOTE: In the absence of QAPP guidance for validating data from field duplicates, the following action will be taken.

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples. Identify which samples within the data package are field duplicates. Estimate the relative percent difference (RPD) between the values for each compound. If large RPDs (> 50%) is observed, confirm identification of samples and note difference in the executive summary.

Sample IDs: _____ Matrix:_____-_____

COMPOUND	SQL ug/L	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicate analyzed with this data package. MS/MSD % recovery RPD used to assess precision. RPD within the required criteria of < 50 %.					

Actions:

a. Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

b. If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

i. If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

ii. If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

iii. If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

iv. If both sample and duplicate results are not detected, no action is needed.

OVERALL ASSESSMENT OF DATA
Action:

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.

2. Write a brief narrative to give the user an indication of the analytical limitations of the data.

Note: The Contract Laboratory Program Project Officer (CLP PO) must be informed if any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).

Overall assessment of the data: Results are valid; the data can be used for decision making purposes.